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WORK AND EXPENDITURES
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AGRICULTURAL EXPERIMENT STATIONS.

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WORK AND EXPENDITURES OF AGRICULTURAL
EXPERIMENT STATIONS.

FEBRUARY 19, 1897.—Laid on the table, and ordered to be printed.

The VICE-PRESIDENT presented the following

LETTER FROM THE SECRETARY OF AGRICULTURE, TRANSMIT-
TING A REPORT ON THE WORK AND EXPENDITURES OF THE
AGRICULTURAL EXPERIMENT STATIONS ESTABLISHED UNDER
THE ACT OF CONGRESS OF MARCH 2, 1887, FOR THE FISCAL
YEAR ENDING JUNE 30, 1896.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D. C., February 18, 1897.

SIR: I have the honor to transmit, herewith, a report on the work and expenditures of the agricultural experiment stations established under the act of Congress of March 2, 1887, for the fiscal year ending June 30, 1896, in compliance with the act making appropriations for this Department for the said fiscal year.

Very respectfully,

J. STERLING MORTON,
Secretary.

The PRESIDENT OF THE SENATE.

OFFICE OF EXPERIMENT STATIONS,
Washington, D. C., January 11, 1897.

SIR: I have the honor to present herewith a report on the work and expenditures of the agricultural experiment stations for the fiscal year ending June 30, 1896.

A. C. TRUE, *Director.*

Hon. J. STERLING MORTON,
Secretary of Agriculture.

THE WORK AND EXPENDITURES OF THE AGRICULTURAL EXPERIMENT STATIONS FOR THE YEAR ENDED JUNE 30, 1896.

This report is made under instructions from the Secretary of Agriculture, in accordance with the following provisions of the act of Congress making appropriations for this Department for the said fiscal year:

The Secretary of Agriculture shall prescribe the form of the annual financial statement required by section three of the said act of March second, eighteen hundred and eighty-seven; shall ascertain whether the expenditures under the appropriation hereby made are in accordance with the provisions of the said act, and shall make report thereon to Congress.

As was the case last year, the report is based on three sources of information, viz, the annual financial statements of the stations rendered on the schedules prescribed by this Department, the printed reports and bulletins of the stations, and the reports of officers of this Department who made personal examinations of the work and expenditures of the stations.

While this is the second report of this character, it should be stated that owing to unavoidable delay in receiving the reports of the stations for the previous fiscal year it was impracticable for the Department to make a complete survey of the operations of the stations in relation to their expenditures until a large portion of the fiscal year covered by the present report had expired. For this reason the views of the Department with reference to details of expenditures and methods of accounting were not formulated for the information of station officers in season to affect the accounts of the past fiscal year. It thus happens that at some stations expenditures were made and methods of accounting pursued which in the view of this Department could not be justified by the terms and spirit of the law. There has, however, been a general disposition on the part of station officers to conform to the views of the Department in these regards as soon as a clear understanding of their import was reached. As the result of the correspondence and conferences between this Department and the stations, the business of the stations has been more thoroughly systematized, the scope and limitations of their operations have been more clearly recognized, and their relations to the educational institutions of which they are departments have been more closely defined.

The general causes which have hitherto weakened the operations of our stations as shown in my previous report have of course still continued to work to their disadvantage and will undoubtedly hamper them more or less in the years to come. There have, however, been many encouraging indications during the past year that clearer notions of the proper functions of experiment stations as organizations for the application of scientific research to the practical needs of agriculture are

beginning to prevail, even in quarters where hitherto there has seemed to be the most misapprehension regarding their rightful work. As new officers are appointed in the stations there is a closer scrutiny of their previous training and experience as related to the work they are expected to undertake. In securing chief officers to plan and conduct the more important researches there is a growing competition to have the best men. While this is bringing into bolder relief the scarcity of the thoroughly competent material for this purpose, it is stimulating the ambition and activity of station officers who can now more confidently look forward to a reasonable degree of success if their efforts in agricultural research are strenuous and well directed. We can thus hope that the ranks of well-trained and efficient administrators and investigators will more speedily be filled.

There are evidences that the wisdom of concentrating the work of individual stations on a few subjects which can be thoroughly treated is being more deeply impressed on station managers. During the past year the establishment of substations, to be supported with the national funds, has been stopped, a number of those already organized have been closed, and arrangements are being made to withdraw from others as fast as the best interests of the work will permit. On the other hand, through the liberality of State legislatures and local communities, some stations have been enabled to wisely extend their operations on the basis of adequate financial support, and in general it may be said that the stations are striving to find out what are the most important agricultural needs of their respective regions which can be aided by scientific research, and are directing their efforts toward supplying these needs in a broad way and for the good of the greatest number. There has, perhaps, been some misapprehension as to the purpose of this Department in advocating the withdrawal of the national funds from the support of permanent substations. This has not been done with a view to confining the operations of the stations to the laboratories and lands immediately contiguous to the institutions with which they are connected. It is rather that these funds may be utilized as circumstances may require for the general good of the agriculture of the several States and of the whole country.

The great evil which has attended the maintenance of permanent substations with the limited funds given to each State from the National Treasury has been that it has involved large expenditures for farm operations and superficial experimenting in a few favored localities and thus prevented the carrying on of more thorough investigations for the general benefit of the agriculture of the State. If there were abundant means for the purpose, there would, of course, be good reason for the establishment of what might be called "fields of demonstration" at different points in the State where improved methods of agriculture and simple experiments, such as the testing of varieties of field crops and fruits, could be carried on for the instruction of the neighboring farmers. This is done successfully in France and other European countries. But this is hardly agricultural research, and experience shows that where funds for that purpose are limited it is far better to concentrate them on the more general problems of agriculture and to manage them in such a way that thorough researches can be conducted under such limitations regarding the localities in which they are to be made as the nature of the particular investigations in progress demand. If a new plant is to be tested with reference to its adaptation to a given State, the effort should be to have it thoroughly tried in as many localities as practicable. This has been successfully done in recent years with the sugar beet in many States. If soils are to be studied, typical

specimens should be taken from as many different soil areas as practicable. If the station undertakes to investigate problems affecting one or two localities only, it should be in a position to withdraw from this investigation when the work is accomplished. If the national funds are reserved for operations emanating from the stations regularly organized under the law in connection, as a rule, with the land-grant colleges, it is believed they will be productive of far greater good to agriculture than if they are largely spent in the maintenance of sub-stations so organized as to be perpetually confined to particular localities and operations.

It is also gratifying to note that the necessity for permanency in the personnel and operations of the stations is being more generally recognized. In some places, it is true, during the past year radical reorganizations of the station staffs have occurred. Here and there changes have apparently been due to political influence or to an unreasonable spirit of restlessness more difficult to account for. These, however, are manifestly the weak spots in our station system. The stations which are doing good work and accomplishing the best results are holding steadily to the lines of work which they have marked out and are changing their forces only as necessity or good and sufficient reasons compel. As the stations where vacillating policies prevail fall more distinctly behind their fellows, it is to be expected that local pride and the demands of an awakening public spirit will compel a readjustment of their affairs on a proper basis.

On the whole the station enterprise in this country has enjoyed a year of prosperity. Its work has been regularly pursued, new fields of usefulness have been occupied, much helpful knowledge has been acquired, and a great mass of useful information has been broadly disseminated. On all sides we hear of increased demands from the farmers for the information which the stations have to give. Station officers are constantly being urged and tempted to interrupt the search after new truth in order that they may set forth more clearly and systematically in the language of the people the results of previous investigations in the realm of agricultural science in this country and abroad. It is more necessary now than ever before to urge that the stations be left to carry on their legitimate work of research. As the investigations of the stations develop in thoroughness and complexity, there is increasing danger of failure and disappointment if they are interfered with or diverted. We are glad to be able to say that thus far the station workers have been able to extend their inquiries year by year, while at the same time they have in large degree met the demand for immediately practical information. That the benefits of station work are realized by increasing numbers of our farmers is well shown in the general disposition of the States and local communities to supplement the funds given by the National Government. Wherever stations are doing thorough work there is a rising tide of popular support for their enterprises, and we may confidently expect a greater development of this movement in the not distant future.

As the result of the action of Congress requiring systematic examination of the work and expenditures of the stations by United States officers, the national funds devoted to this great enterprise are expended with greater carefulness and a closer scrutiny of the legitimacy and desirability of proposed expenditures, the stations are being brought closer together, so as to form more truly a great national system of agricultural research, the various parts of which have freedom of initiative and action conformable to our general scheme of government and education, and the basis is being laid for a standard of com-

parison of the usefulness and success of their operations which shall rest on the consensus of qualified observers and critics of their work wherever they may be found.

Agricultural experiment stations are now in operation under the act of Congress of March 2, 1887, in all the States and Territories. Alaska is the only section of the United States which has no experiment station. In each of the States of Alabama, Connecticut, New Jersey, and New York a separate station is maintained wholly or in part by State funds, and in Louisiana a station for sugar experiments is maintained mainly by funds contributed by sugar planters. The separate station maintained for many years by the State of Massachusetts has been combined with the Hatch Experiment Station in that State. Excluding the branch stations established in several States, the total number of stations in the United States is 54. Of these, 52 receive the appropriation provided for in the act of Congress above mentioned. The total income of the stations during 1896 was \$1,133,791.23, of which \$720,000 was received from the National Government, the remainder, \$413,791.23, coming from the following sources: State governments, \$267,663.10; individuals and communities, \$5,124.75; fees for analyses of fertilizers, \$51,884.95; sales of farm products, \$69,806.50; miscellaneous, \$19,311.93. In addition to this the Office of Experiment Stations had an appropriation of \$30,000 for the past fiscal year. The value of additions to equipment of the stations in 1896 is estimated as follows: Buildings, \$76,175.24; libraries, \$10,902.68; apparatus, \$14,753.95; farm implements, \$19,103.76; live stock, \$19,503.55; miscellaneous, \$2,416.56; total, \$148,776.13.

The stations employ 584 persons in the work of administration and inquiry. The number of officers engaged in the different lines of work is as follows: Directors, 68; chemists, 121; agriculturists, 64; horticulturists, 65; farm foremen, 25; dairymen, 20; botanists, 40; entomologists, 42; veterinarians, 26; meteorologists, 19; biologists, 15; physicists, 7; geologists, 6; mycologists and bacteriologists, 21; irrigation engineers, 6; in charge of substations, 33; secretaries and treasurers, 25; librarians, 8; and clerks, 31. There are also 16 persons classified under the head of "miscellaneous," including superintendents of gardens, grounds, and buildings; apiarists; herdsmen, etc. Two hundred and sixty-six station officers do more or less teaching in the colleges with which the stations are connected.

During 1896 the stations published 45 annual reports and 323 bulletins. Besides regular reports and bulletins, a number of the stations issued press bulletins, which were widely reproduced in the agricultural and county papers. The mailing lists of the stations now aggregate about half a million names. Correspondence with farmers and calls upon station officers for public addresses at institutes and other meetings of farmers are constantly increasing. The station officers have contributed numerous articles on special topics to agricultural and scientific journals..

ALABAMA.

Agricultural Experiment Station of the Agricultural and Mechanical College of Alabama, Auburn.

DEPARTMENT OF THE AGRICULTURAL AND MECHANICAL COLLEGE OF ALABAMA.

The Alabama station is at present making investigations of the cotton plant a prominent feature of its work. These investigations include experiments in crossing varieties, pot and field experiments with fertil-

izers, culture and seeding experiments, and studies of diseases. Studies of the grasses of the State; field experiments with tobacco, cowpeas, peanuts, chufas, and other crops; pig-feeding experiments; studies of nematodes and of tomato diseases, etc., are also in progress. Cooperative experiments are being conducted in a number of places. A large number of chemical analyses are made in connection with the investigations of the station and the fertilizer control. The control work is provided for by a tax on fertilizers which annually nets the station several thousand dollars. The station has for the past two years cooperated with this Department by making the chemical analyses required by dietary studies carried on among negroes at Tuskegee.

The income of the station was as follows:

| | |
|-----------------------------------|-------------|
| United States appropriation | \$15,000.00 |
| State fertilizer tax | 8,249.25 |
| Total | 23,249.25 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the past fiscal year were Bulletins 65-71.

Bulletin 65, pp. 23.—Cooperative Seed Tests.—Reports of 23 farmers throughout the State on cooperative tests of crops grown from seeds sent out by this Department.

Bulletin 66, pp. 9.—Cane Sirup.—A report on investigations in the manufacture and purification on a small scale of cane sirup and methods for its preservation.

Bulletin 67, pp. 30.—Bovine Tuberculosis.—A popular summary of information on tuberculosis as affecting man and domestic animals.

Bulletin 68, pp. 13.—Pig Feeding.—The details and results of experiments in feeding pigs with crushed cotton seed and cotton-seed meal, in combination with other grains.

Bulletin 69, pp. 28.—Treatment of Some Fungus Diseases.—Information relating to fungus diseases and the means of their prevention, largely compiled.

Bulletin 70, pp. 21.—The Flora of Alabama, Part V.—A partial list of the native wild plants of Alabama, comprising 2 orders and 57 genera.

Bulletin 71, pp. 9.—Experiments with Foreign Cotton.—Results of experiments made at the station on the acclimating and growing of foreign cottons, with a botanical classification of the varieties grown and a microscopical examination of the fibers.

The most noteworthy fact concerning this station's operations during the past year has been the effort to develop and strengthen its work in the direction of investigations of staple crops, especially cotton, and the outlook for success in this line is decidedly encouraging. The station is doing a large amount of useful work, and its affairs are in good condition.

Canebrake Agricultural Experiment Station, Uniontown.

The Alabama Canebrake Station continues to confine its work to field experiments with cotton, forage plants, and other staple crops, and work in veterinary science and practice. It is maintained wholly with State funds, its income for the past year being \$2,500.

ARIZONA.

Agricultural Experiment Station of the University of Arizona, Tucson.

DEPARTMENT OF THE UNIVERSITY OF ARIZONA.

The Arizona Station has continued to make experiments with fruits and investigations on irrigation problems the main features of its work. Experiments with forage plants, tobacco, and canaigre, and investigations in entomology and forestry are also in progress. In pursuance of the policy of concentration of work the substations at Mesa and Willcox have been discontinued. Experiments were continued at Phoenix and in cooperation with the prison authorities at Yuma. Special efforts have been made to interest the farmers, fruit growers, and stockmen of the Territory in the station by holding a convention, which resulted in the formation of the Arizona Agricultural Association. Work on the university grounds at Tucson, which have been proved unfit for fruit trees and sundry crops, has been greatly diminished.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Miscellaneous..... | 43.50 |
| Total..... | 15,043.50 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the past fiscal year were Bulletins 14-18.

Bulletin 14, pp. 27.—Notes on Scale Insects in Arizona.—Descriptive and life-history notes on several species of scale insects, with remarks on their distribution and ravages in Arizona and suggestions for repression.

Bulletin 15, pp. 18.—List of Varieties of Fruit.—A list of the varieties of fruits grown at Phoenix, Tucson, and Mesa substations.

Bulletin 16, pp. 13.—Notes on Apricots at Phoenix Substation.—Short cultural and field notes, with brief descriptions of the varieties grown.

Bulletin 17, pp. 28.—Agricultural Convention, Part I.—A partial report of the proceedings of a convention of farmers, fruit growers, and stockmen held at Phoenix.

Bulletin 18, pp. 21.—Agricultural Convention, Part II.—The completed report of the above-mentioned convention.

The Arizona Station has been reorganizing its work to a considerable extent during the past year. It is studying the agricultural needs and resources of the Territory with a view to aiding most efficiently in their development. The station still needs to have land in the vicinity of Tucson which is better adapted to experimental purposes.

ARKANSAS.

Arkansas Agricultural Experiment Station, Fayetteville.

DEPARTMENT OF ARKANSAS INDUSTRIAL UNIVERSITY.

The Arkansas Station has continued work in the same lines as heretofore, mainly experiments with fruits and chemical investigations at the main station, and field experiments with cotton and other crops at

the two substations. Studies of diseases of plants and animals are also made.

The income of the station, as reported to this Department, consisted solely of the United States appropriation, \$15,000.

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 35-39 and the Annual Report for 1895.

Bulletin 35, pp. 30.—Animal Pathology.—A popular summary of information regarding some of the more important diseases of farm animals and the results of tuberculin tests on the station herd.

Bulletin 36, pp. 20.—Grasses and Clovers.—A popular discussion of the forage plants suited to the different parts of the State, with notes on the care and management of pastures and meadows and detailed descriptions of 19 species which have given the best results at the station.

Bulletin 37, pp. 6.—Sirups and Molasses.—A brief discussion of the nutritive values of various kinds of sirups, with chemical analyses of 25 commercial samples.

Bulletin 38, pp. 14.—Irish Potatoes.—A general discussion on the culture of Irish potatoes, largely compiled, with the results of variety tests made at the station.

Bulletin 39, pp. 18.—Horticultural Division Records of Tests of Strawberries and Grapes, with the Results of the Season's Spraying Experiments.

Annual Report for 1895, pp. 186.—A reprint of Bulletins 31-37, with brief reports by the director and meteorologist, and a financial statement for the fiscal year ending June 30, 1895.

The affairs of the Arkansas Station are managed on a conservative policy with a view to awakening interest in experimental work in behalf of agriculture and gaining the confidence and support of the farmers of the State, which hitherto have not been given to the station as fully as could be desired.

CALIFORNIA.

Agricultural Experiment Station of the University of California, Berkeley.

DEPARTMENT OF THE UNIVERSITY OF CALIFORNIA.

The work of the California Station during the past year has included chemical and other investigations of soils, with special reference to the utilization of "alkali" soils; chemical studies of waters, fertilizers, foods, feeding stuffs, sugar beets, sugar cane, fruits, canaigre, etc.; investigations in the culture of olives and the making of olive oil; entomological investigations; studies in botany, horticulture, and forestry; and culture experiments with a great variety of forage plants, cereals, vegetables, fruits, and forest trees at the central station and at seven outlying stations. The carefully guarded plan of distribution of new varieties of seeds and plants to persons in the State who are willing to pay the expenses of the distribution is still continued. The station has recently undertaken food investigations in cooperation with this Department.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State appropriation..... | 12,743.85 |
| Total | 27,743.85 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 108-110 and the Annual Report for 1895.

Bulletin 108, pp. 12.—*The Distribution of the Salts in Alkaline Soils.*—The results of investigations on the distribution of salts on virgin, cultivated, and irrigated soils of alkaline regions.

Bulletin 109, pp. 14.—*Distribution of Seeds and Plants.*—A descriptive list of seeds and plants distributed by the station.

Bulletin 110, pp. 17.—*The Study of Human Foods and Practical Diets.*—A summary of information on the composition and digestibility of foods, dietaries, and dietary standards, with the chemical analyses of several California foods.

Annual Report for 1895, pp. 481.—This includes discussions and results of extended chemical investigations on soils, waters, rocks, and minerals, fertilizers, fruits, vegetable products, and food materials; a reprint of Bulletin 107, and a revised and enlarged reprint of Bulletin 108; the successful results of investigations in growing sugar beets on alkaline soils; notes on varieties of olives, olive oil machinery, classification of olive oils, pickling processes, etc.; notes by the entomologist on plant diseases and insects; a synopsis of the meteorological observations for the year; reports of culture work at the central and substations, with numerous papers on miscellaneous topics; and a financial statement for the fiscal year ending June 30, 1895.

The California Station continues to carry on a large amount of scientific and practical work of great usefulness to the agricultural interests of the State. The policy and management of the station during the past year have been along the same lines which for many years have brought great success in its operations.

COLORADO.

Agricultural Experiment Station, Fort Collins.

DEPARTMENT OF THE STATE AGRICULTURAL COLLEGE OF COLORADO.

The Colorado Station has continued its work on irrigation problems, meteorology, field crops, large and small fruits, entomology, botany, and chemistry. Feeding experiments with lambs and pigs and work in dairying have also been undertaken. Special studies of bees have been made. In pursuance of the policy of concentration of work the substations at Monument and Montevista have been discontinued. The substation at Cheyenne Wells is very largely supported by private funds, but the substation at Rockyford is still maintained at an expense of about \$3,000 per annum from the limited funds of the station.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 2,952.71 |
| Miscellaneous..... | 65.23 |
| Total | 18,017.94 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the past fiscal year were Bulletins Nos. 32-34 and the Annual Report for 1895.

Bulletin 32, pp. 48.—Sheep Feeding in Colorado.—Statistics on sheep raising in Colorado, with the results of feeding trials with four different breeds.

Bulletin 33, pp. 63.—Seepage or Return Waters from Irrigation.—The results of investigations on the seepage of the Cache a la Poudre and South Platte rivers in Colorado since 1885 are tabulated and discussed.

Bulletin 34, pp. 36.—Cattle Feeding in Colorado.—A general discussion of the subject, with State statistics, and the results of feeding experiments with steers at the station farm.

Annual Report for 1895, pp. 164.—Brief reports by the director, heads of departments, and chiefs of substations on the work of the year, with a financial statement for the fiscal year ending June 30, 1895.

This station is endeavoring to concentrate its work and develop it along lines of general usefulness to its State. Unless the State is able to supplement the United States funds it is still believed that the wisest policy will be to discontinue the expenditures for substations. The investigations on irrigation problems thus far conducted have proved very useful, and with the cooperation of different departments of the station might easily be developed along lines of still greater practical importance.

CONNECTICUT.

The Connecticut Agricultural Experiment Station, New Haven.

The Connecticut State Station continues to make chemical and experimental studies of fertilizers a prominent feature of its work, but is also carrying on important investigations of plant diseases and of the constituents, especially the proteids, of feeding stuffs and other agricultural products. It has recently extended its inquiries on fertilizers to their application to horticultural crops grown in forcing houses and has already obtained interesting results. Under an act regulating the manufacture and sale of food products in Connecticut, passed by the legislature of that State in 1895, the station is charged with making "analyses of food products on sale in Connecticut suspected of being adulterated," and when its analyses show that adulterated food products are being sold the fact is to be reported to the prosecuting officer in the town where the adulterated food product was found. The law also provides that the station may adopt or fix standards of purity, quality, or strength, when such standards are not specified or fixed by statute. All articles used as food or drink by men, horses, or cattle are included under the provisions of the law and are subject to the inspection and investigation of the station. The expenses of this work are provided for by a State appropriation of \$2,500 per annum.

The income of the station was as follows:

| | |
|------------------------------------|------------|
| United States appropriation | \$7,500.00 |
| State appropriations | 11,875.00 |
| Fees for fertilizer analyses | 6,669.93 |
| Miscellaneous | 470.72 |
| Total | 26,515.65 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of this station received during the past year were Bulletins 121, 122, and the Annual Report for 1895.

Bulletin 121, pp. 6.—*The Elm-Leaf Beetle.*—Brief popular notes, with suggestions regarding repression.

Bulletin 122, pp. 11.—*Cost of Nitrogen, Phosphoric Acid, and Potash in Connecticut.*—A statement of methods of estimating the value of various forms of fertilizers based on the results of chemical analyses at the station.

Annual Report for 1895, pp. 320.—This embraces chemical analyses of feeding stuffs and the various forms of fertilizers; fertilizer experiments on forcing house crops, with chemical analyses of the crops grown; investigations on the loss of nitrogen from stable manure; vegetation experiments on the availability of nitrogen in certain nitrogenous materials; effect of potash salts on potatoes; fertilizer experiments on tobacco, with investigations on the fire-holding properties of the tobacco grown; investigations on the nitrogen and mineral matter in a peach crop; experiments for the prevention of potato scab; transplanting onions for the repression of onion smut; notes on the diseases and insects of fruits and vegetables; field experiments with maize; and the results of investigations on the chemical nature of diastase, conglutin, vitellin, the proteids of meat and potatoes, and on the legumin and other proteids of the pea and vetch; together with the reports of the treasurer and board of control.

The Connecticut State Station is in a prosperous and progressive condition. The station is doing a large amount of scientific and practical work, and increasingly enjoys the confidence and support of the people of the State.

STORRS AGRICULTURAL EXPERIMENT STATION, STORRS.

DEPARTMENT OF STORRS AGRICULTURAL COLLEGE.

The work of the Connecticut Storrs Station during the past year has included investigations on the food and nutrition of domestic animals and of men, dairy bacteriology, irrigation, field experiments with fertilizers and forage plants, and on green manuring, and meteorological observations. The investigations on food and nutrition of man have been aided by a special appropriation by the State and have been carried on in cooperation with this Department. The vice-director and chemist of the station resigned at the close of the year to become director of the Maine Station, and the agriculturist was appointed vice-director in his stead. Another chemist has been appointed, and a secretary has been added to the station staff. There has also been a change in the position of assistant agriculturist.

The income of the station was as follows:

| | |
|----------------------------------|------------|
| United States appropriation..... | \$7,500.00 |
| State appropriation..... | 1,800.00 |
| Farm products..... | 52.10 |
| Miscellaneous..... | 762.49 |
| Total..... | 10,114.59 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 15-17 and the Annual Report for 1895.

Bulletin 15, pp. 14.—*Food Investigations and Publications.*—This calls attention to the bulletins and articles already published on this subject, points out the purpose of food investigations, and describes the work now in progress.

Bulletin 16, pp. 14.—*Experiments in Cream Ripening: Flavor, Aroma, Acid.*—The results of extended investigations on the different forms of bacteria in the dairy.

Bulletin 17, pp. 6.—*Hay Substitutes.*—Suggestions as to substitutes for hay, with details in regard to soil, seeding, harvesting, yield, preservation, etc., based on the investigations of the station.

Annual Report for 1895, pp. 216.—This contains a brief report on the work of the year by the director; the result of investigations on the nature and use of different forms of bacteria in the dairy; the result of one year's experience with *Bacillus* No. 41 on general dairying; a study of rations fed to milch cows; soiling experiments with leguminous and cereal crops; experiments in fattening sheep; field experiments with fertilizers; meteorological observations; a reprint of Bulletin 15; results of cooperative studies of dietaries; chemical analyses of fodders and feeding stuffs, and details of digestion experiments carried on with sheep.

The station is devoting itself very largely to investigations regarding the food and nutrition of domestic animals and of man. It is especially endeavoring to improve the methods and apparatus for investigations in these lines. This work is of general importance and was materially advanced during the past year.

DELAWARE.

The Delaware College Agricultural Experiment Station, Newark.

DEPARTMENT OF DELAWARE COLLEGE.

The work of the Delaware Station during the past year has included investigations on animal diseases, horticulture, plant diseases, and entomology; culture experiments with special crops; feeding experiments, and work in dairying.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 15.49 |
| Total | 15,015.49 |

A report for the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 27-30.

Bulletin 27, pp. 22.—*Test of Sorghum Varieties.*—Results of investigations in improving the varieties of sorghum by planting seed from the stock of highest individual merit.

Bulletin 28, pp. 14.—*Strawberries.*—Report on a test of 71 varieties; opinions of 20 growers throughout the State on the best varieties, and notes on the leaf blight and strawberry weevil.

Bulletin 29, pp. 22.—*Experiments in the Treatment of Peach Rot and Apple Scab.*—A report on experiments with fungicides.

Bulletin 30, pp. 14.—*The San José Scale Insect.*—This gives the present status of the San José scale in Delaware and elsewhere in the United States.

The Delaware Station is carrying on useful investigations with special reference to the needs of the agriculture of the State. The station is managed on a conservative policy and confines its operations to a limited range of subjects. The station officers have confined themselves almost exclusively to station work, and the station funds have not been encroached upon by the college.

FLORIDA.

Agricultural Experiment Station of Florida, Lake City.

DEPARTMENT OF FLORIDA STATE AGRICULTURAL COLLEGE.

The Florida Station is making culture experiments with forage and root crops, especially with a view to improving the conditions of animal production in the State; variety, fertilizer, culture, and pruning experiments with orchard fruits; variety and culture experiments with pine-apples, celery, and miscellaneous vegetables, and chemical studies of the soils of the State. The substations at Fort Myers and De Funiak Springs were continued during the year. The work at Fort Myers is in promising condition, while that at De Funiak Springs is of comparatively little value. The station has done what it could to aid the orange growers in restoring their groves by investigating the subject and publishing information regarding it.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 900.16 |
| Farm products..... | 300.81 |
| Total..... | 16,200.97 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were *Bulletins 29-35* and the *Annual Report for 1894*.

Bulletin 29, pp. 19.—*The San José Scale.*—Illustrated descriptive, life history, and remedial notes on the San José scale, largely compiled.

Bulletin 30, pp. 20.—*The Culture of Tobacco.*—Popular information on the culture, curing, and marketing of tobacco.

Bulletin 31, pp. 57.—*Some Market Vegetables for Florida.*—Popular information on the growing, manuring, handling, and marketing of various kinds of vegetables.

Bulletin 32, pp. 4.—*Cotton, Its Cultivation and Fertilization.*—A brief popular article on this subject.

Bulletin 33, pp. 26.—*Present Conditions and Treatment of Orange Groves.*—Popular information based on observations made by an expert orange grower, who visited different parts of the State and consulted with leading orange growers.

Bulletin 34, pp. 86.—*Insect Enemies of Truck and Garden Crops.*—Illustrated descriptions, life histories, and notes on methods of repression of insects affecting vegetables, with descriptions of numerous forms of spraying apparatus, largely compiled.

Bulletin 35, pp. 24.—*Cassava.*—Treats of the culture of cassava and other forage plants.

Annual Report for 1894, pp. 4.—Brief summary of the work of the year and a financial statement for the fiscal year ending June 30, 1894.

The Florida Station is making progress in a number of lines of useful work. With the limited means at its disposal it needs to concentrate its efforts more fully. It is believed that the efficiency of this station would be promoted by the discontinuance of the substation at De Funiak Springs, where very little work is undertaken which could not be done just as well at Lake City, or through inexpensive cooperative experiments with interested farmers. The work at Fort Myers, in the southern part of the State, is so different from that at Lake City that it is hoped that it may be provided for by the State, and it is thought best to permit its continuance on a temporary basis until ample opportunity has been afforded to secure financial aid for this enterprise from some other source than the United States appropriation, which is needed and should be reserved for such general investigations as can best be carried on under the immediate supervision of the expert officers at the Lake City Station.

GEORGIA.

Georgia Experiment Station, Experiment.

DEPARTMENT OF GEORGIA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

The Georgia Station has continued its work along the lines of fertilizer and culture experiments with cotton and corn; variety tests of cowpeas, sweet potatoes, and small and orchard fruits; experiments in crossing cotton; feeding experiments with dairy cows, and practical work in dairying. The dairy work has thus far been conducted chiefly with the purpose of stimulating the interest of farmers of the State in improved methods of dairying.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 607.82 |
| Farm products..... | 2,040.32 |
| Miscellaneous..... | 770.51 |
| Total..... | 18,418.65 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of this station received during the fiscal year were Bulletins 28-31, and the Annual Reports for 1894 and 1895.

Bulletin 28, pp. 64.—*Grape Culture.*—A general treatise for the information of growers.

Bulletin 29, pp. 58.—*Irish Potatoes.*—A popular bulletin on the culture and diseases of potatoes, largely compiled, with the results of extended variety tests made at the station.

Bulletin 30, pp. 30.—*Corn Culture.*—*Oat Culture.*—A report on experiments in fertilizing, detasseling, variety testing, and harvesting of corn, with a chemical analysis of the different parts of the corn plant; experiments in oat culture, and a brief extract from Bulletin 27 of the station on cotton culture.

Bulletin 31, pp. 30.—*Cotton Culture.*—This is a continuation of work recorded in Bulletin 27 of the station, and includes the results of fertilizer, culture, and variety experiments.

Annual Reports for 1894 and 1895, pp. 8 and 9.—Brief reports on the work of the two years, lists of bulletins published, and financial statements for the fiscal years ending June 30, 1894, and June 30, 1895, respectively.

The work of the Georgia Station continues to be carefully and systematically conducted in lines deemed of immediate practical benefit to the farmers of the State. The station has thus far been unable to avail itself of the advantage which it was supposed the legislature intended to give it through a law providing for the publication of its bulletins by the State board of agriculture. It is to be hoped that any technical difficulty in securing the aid of the State in this direction may soon be removed and that the burden of printing the station publications may be taken from the United States funds, as has been done in a number of the States.

IDAHO.

Agricultural Experiment Station of the University of Idaho, Moscow.

DEPARTMENT OF THE UNIVERSITY OF IDAHO.

The Idaho Station has been making an earnest effort to concentrate its work and reorganize it in a way which promises to greatly increase its efficiency. The original purpose of having what were practically four separate stations has been abandoned, and arrangements have been made to discontinue the outlying stations as soon as practicable and to materially increase the work of the main station. Land deemed suitable for experimental purposes has been procured in the immediate vicinity of the station offices at Moscow, and field experiments will be undertaken there. During the past year the station has conducted field experiments with grain and forage crops, horticultural experiments, chemical analyses, botanical and entomological studies, and work in agricultural physics.

The income of the station was as follows:

| | |
|----------------------------------|----------|
| United States appropriation..... | \$15,000 |
| Farm products..... | 500 |
| Total..... | 15,500 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The only regular publication received from this station during the past fiscal year was—

Bulletin 9, pp. 29.—*I. Idaho Soils: Their Origin and Composition.*—*II. Miscellaneous Analyses.*—Part I embraces a general discussion on the nature and origin of soils, giving the topographical and geological features of Idaho and the results of the chemical analyses of numerous samples from all over the State. Part II gives the results of the chemical analyses of samples of vinegar, kerosene oil, milk, and butter.

The station has also issued six bulletins of information for matters of immediate practical interest to farmers and fruit growers, which have been published in the press of the State.

It is believed that the finances of this station are now on a sound basis, and it is hoped that nothing will interfere with the policy of concentration of work determined upon by the authorities of the station. It is confidently believed that if this policy is consistently carried out the station will soon be in a position to do work which will be of far

greater value to the State of Idaho at large than was possible under previous conditions. One strong station, with a competent staff of expert officers, should certainly accomplish more work of permanent value to the agriculture of Idaho than could be done by four weak stations.

ILLINOIS.

Agricultural Experiment Station of the University of Illinois, Urbana.

DEPARTMENT OF THE UNIVERSITY OF ILLINOIS.

The Illinois Station has continued field experiments with corn, oats, wheat, clovers, and other forage plants; feeding experiments with steers, pigs, and cows; dairy experiments, especially on the pasteurization of cream and milk; variety, culture, and other experiments with orchard and small fruits and with vegetables; studies of bacterial and fungus diseases of plants, and investigations on injurious insects, especially the contagious diseases of chinch bugs. The present policy of the station is to make investigations on Indian corn a very prominent feature of its work. The intention is to study "Indian corn and its relations from every conceivable point of view, including among other things the following items: (1) Its botanical, chemical, and physiological characters and requirements; (2) its culture; (3) breeding; (4) its relation to the elements of fertility, ascertaining what rotations or systems of cropping are best adapted to the largest practicable production of corn both in acreage and yield, and to maintaining the fertility of corn lands." Cooperative experiments have been undertaken at three places "with a view to determining in what way the peculiar clay soil of a considerable portion of southern Illinois may be cultivated to best advantage." Near the close of the year the organization of the station was changed, with a view to bringing it into harmony with that of other departments of the university. The board of direction has become an advisory board. A director of the station has been appointed, who "is charged with general oversight of the work of the station and is responsible directly to the board of trustees through the president of the university."

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Fees..... | 140.00 |
| Farm products..... | 2,904.53 |
| Miscellaneous..... | 204.49 |
| Total..... | 18,249.02 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were *Bulletins 41-43* and the *Annual Reports for 1894 and 1895*.

Bulletin 41, pp. 14.—Experiments with Wheat, 1888-1895.—Experiments with Oats, 1888-1895.—A report on culture and variety experiments with wheat and oats, and with fertilizers on wheat in southern Illinois.

Bulletin 42, pp. 17.—Corn Experiments, 1895.—A report on experiments with corn, with reference to the time and thickness of planting, rate of growth of the corn plant, rotation, and test of varieties.

Bulletin 43, pp. 28.—Composition and Digestion of Corn Ensilage, Cow-

pea Ensilage, Soja Bean Ensilage, and Corn Fodder.—A report on digestion experiments made with 4 steers on the above feeding stuffs, with a short appendix on the constituents and use of foods.

Annual Report for 1894-95, pp. 14.—Brief report on the work of the station and a financial report for the fiscal year ending June 30, 1895.

An active and progressive spirit has pervaded the operations of the Illinois Station during the past year. The changes which have been made in its organization and work have been in the direction of greater concentration and unity in its operations. The facilities for work are being increased and the general prosperity of the university with which it is connected points to a larger development of the station at no distant day.

INDIANA.

Agricultural Experiment Station of Indiana, Lafayette.

DEPARTMENT OF PURDUE UNIVERSITY.

The work of the Indiana Station during the past year has included feeding experiments with sheep, calves, and dairy cattle; field experiments with corn, wheat, oats, and forage plants, with fertilizers, and on rotation of crops and methods of tillage; testing of horticultural varieties, and experiments in crossing fruits and in root grafting; soil investigations, including cooperative experiments on peculiar soils in three places in southern Indiana; analyses of sugar beets; pot experiments with different soils, fertilizers, and plants; studies on corn smut and potato scab; investigations on the economic value and culture of mushrooms; and studies of animal diseases, especially hog cholera, swine plague, milk sickness, tuberculosis, and a contagious eye disease. The botanist of the station is making important studies in physiological botany and is devoting considerable attention to the devising of improved apparatus for investigations in this line. The chemist of the station also acts as State chemist and in this capacity makes numerous fertilizer analyses, the expense of this work being provided for under a State law. Purdue University, with which this station is connected, has cooperated with this Department in food investigations. Under a recently enacted State law the board of trustees has been increased from six to nine members appointed in classes of three for terms of different length. All the members of the old board were reappointed. The director of the station has been relieved of executive work in connection with the school of agriculture of the university.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 2,239.25 |
| Total..... | 17,239.25 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 56-60 and the Annual Reports for 1894 and 1895.

Bulletin 56, pp. 22.—*Field Experiments with Wheat.*—*Potato Scab and its Prevention.*—A report on experiments on the culture of wheat, including a cooperative test of varieties; and an account of extended investigations on potato scab and the use of corrosive sublimate for its prevention.

Bulletin 57, pp. 18.—*The Improvement of Unproductive Black Soils.*—Results of experiments and investigations on the unproductive areas of deep, black humus soils in Indiana, known as "bogus lands."

Bulletin 58, pp. 9.—*Hog Cholera and Swine Plague in Indiana.*—A popular article on the characteristics of hog cholera, including historical and statistical data, and the tabulated answers of 95 breeders on the occurrence of the disease in the State and the measures taken for its prevention.

Bulletin 59, pp. 23.—*Bacteriosis of Carnations.*—Results of extended investigations on this disease, with recommendations for its repression.

Bulletin 60, pp. 12.—*The American Persimmon.*—A popular bulletin on its habits, distribution in Indiana, methods of propagation and cultivation, and suggestions concerning its improvement.

Annual Reports for 1894 and 1895, pp. 53 and 41.—Brief reports by the director and heads of departments on the work of the two years, and financial statements for the fiscal years ending June 30, 1894, and June 30, 1895.

The work of the Indiana Station is conducted in a systematic and orderly manner, and with useful results. The investigation of animal diseases is a new feature of the work of this station, and is attracting considerable attention in the State.

IOWA.

Iowa Agricultural Experiment Station, Ames.

DEPARTMENT OF IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

The work of the Iowa Station during the past year has included feeding experiments with pigs, sheep, and dairy cows; breeding experiments with pigs; culture and variety experiments with cereals, grasses, and other forage crops; studies of soil moisture; chemical studies of native grasses and milk preservatives; botanical investigations of weeds and plant diseases; studies of injurious insects, especially those feeding on grasses; variety, crossing, and culture experiments with horticultural plants, especially extensive trials of Russian orchard fruits; investigations of diseases of sheep and swine. A new greenhouse has been erected at a cost of about \$6,000, provided by the State, which will be largely used for experimental purposes. Extensive improvements have been made on the farm barn and a new water system is being put in for the general use of the college and station. These improvements, for which the State appropriated \$40,000, will be of material advantage to the station. The botanist of the station has been given enlarged quarters with special reference to the development of work in bacteriology.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State appropriation..... | 1,500.00 |
| Farm products..... | 3,358.32 |
| Miscellaneous..... | 125.20 |
| Total..... | 19,983.52 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were *Bulletins* 27-32 and the *Biennial Report* for 1894 and 1895.

Bulletin 27, pp. 69.—A report on investigations under the following heads: Soiling crops of 1894; growing turnips; construction and ventilation of dairy barns; experimental crop notes for 1894; potato scab and its prevention; rutabaga rot; observations on insects in 1894; and the best ferns for the North and Northwest.

Bulletin 28, pp. 62.—An account of investigations made along the following lines: Feeding experiments with Angus and Shorthorn cattle; experiments in feeding cotton-seed and other meals to hogs; cooperative sugar-beet culture experiments; poisoning from cowbane; the sand cherry as a stock for the plum and cherry; test of dairy salts; churning record of the college creamery; rainfall record; and an article giving the description and nature of prickly lettuce and buffalo bur.

Bulletin 29, pp. 46.—*Investigations of Bovine Tuberculosis with Special Reference to its Existence in Iowa.*—A general discussion of the subject with the results of extended observations on herds throughout the State.

Bulletin 30, pp. 33.—*Treatment of Currants and Cherries to Prevent Spot Diseases; Squirrel-tail Grass, or Wild Barley.*—Results of spraying investigations, and a popular discussion on the nature and habit of squirrel-tail grass, or wild barley.

Bulletin 31, pp. 34.—*Experiments with New Orchard Fruits, Trees, and Shrubs.*—Results of investigations at the station.

Bulletin 32, pp. 166.—A report on investigations under the following heads: Entomological work for 1895, including extended investigations on the chinch bug and the use of the white fungus for its repression; feeding dairy cows, including the feeding of cotton-seed meal; maturing skim-milk calves; crop experiments for 1895; butter flavor; advances in breeding fruits and shrubs; milk preservatives—formalin; soil moisture; and window gardens.

Biennial Report for 1894 and 1895, pp. 28.—Brief reports by the director and heads of departments on the work of the years 1894 and 1895, with a financial statement covering the fiscal years ending June 30, 1894 and 1895.

The work of the Iowa Station is being actively prosecuted. The college with which it is connected is pursuing a liberal policy toward the station and increasing the facilities for original investigations along scientific and practical lines related to agriculture as fast as it has added resources which can be made available for this purpose.

KANSAS.

Kansas Agricultural Experiment Station, Manhattan.

DEPARTMENT OF KANSAS STATE AGRICULTURAL COLLEGE.

The work of the Kansas Station during the past year has included feeding experiments with steers, heifers, and pigs; variety and culture experiments with oats, wheat, corn, etc., and on rotation of crops; chemical examinations of sorghum and sugar beets; studies of soil moisture; investigations of weeds and plant diseases, especially the smuts of cereals, corn, and sorghum; studies of injurious insects, especially flies affecting animals and insects infesting apple, cottonwood, and poplar trees; variety tests and other experiments with horticultural plants; irrigation experiments with small fruits and grapes; studies of diseases of animals, especially the so-called cornstalk disease and infectious

abscesses in horses. The substations at Garden City and Oberlin have been discontinued. Experiments on problems connected with irrigation will, however, be conducted at Oakley in cooperation with the State irrigation commission.

The income of the station was as follows.

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 539.75 |
| Total..... | 15,539.75 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 50-57 and the Annual Report for 1895.

Bulletin 50, pp. 36.—Kansas Weeds.—Seedlings.—Descriptive notes on the seedlings of 145 Kansas weeds, with illustrations showing their appearance and habit.

Bulletin 51, pp. 31.—Steer Feeding Experiments, Series IV.—A report on investigations in feeding pure bred shorthorns and scrubs.

Bulletin 52, pp. 15.—Kansas Weeds.—Preliminary Circular on Distribution.—A bulletin of information preliminary to the study of weed distribution throughout the State. The distribution of 119 species is given.

Bulletin 53, pp. 12.—Feeding Experiments with Pigs on Corn, Wheat, Kafir Corn, and Cotton seed Meal.—A report on investigations at the station along these lines.

Bulletin 54, pp. 11.—Experiments with Oats.—A report on two years' investigations on methods of culture, hot-water treatment of seed for smut, and on tests of varieties.

Bulletin 55, pp. 20.—Small Fruits by Irrigation.—A popular article on the supply, storage, and distribution of water for irrigating small fruits, and on the culture of strawberries.

Bulletin 56, pp. 20.—Part I. Experiments with Corn.—Part II. Experiments with Kafir Corn.—Results of investigations on methods of culture and seed selection, with brief notes on the feeding value of Kafir corn.

Bulletin 57, pp. 64.—Kansas Weeds, III.—Descriptive List.—Brief descriptions of 209 species, illustrated by original drawings of typical leaves from each plant, and accompanied by maps of the State showing where each plant has been found.

Annual Report for 1895, pp. 24.—Brief reports by the council and heads of departments on the work of the year, with an inventory of the station property and a financial statement for the fiscal year ending June 30, 1895.

The work of the Kansas Station has steadily progressed during the past year, and such changes in its operations as have occurred have been in the direction of greater concentration and increased efficiency. The development of its work along the lines of soil and irrigation studies is especially noteworthy.

KENTUCKY.

Kentucky Agricultural Experiment Station, Lexington.

DEPARTMENT OF THE AGRICULTURAL AND MECHANICAL COLLEGE OF KENTUCKY.

The Kentucky Station has continued its work on field experiments with corn, oats, wheat, hemp, potatoes, etc.; variety tests of grasses,

clovers, and other forage plants; studies of methods of soil analysis; analysis and inspection of commercial fertilizers; horticultural experiments, including subirrigation in greenhouses; studies of fungus diseases of plants; entomological investigations; dairying, including a study of the variation in butter fat in the milk of cows. An insectary and an experimental dairy house have been constructed, and the laboratory facilities of the chemical division have been extended. The analysis and inspection of commercial fertilizers continues to yield the station a considerable revenue, which is available for agricultural investigations. Work in dairying is being extended.

The income of the station was as follows:

| | |
|-----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Fees for fertilizer analyses..... | 7,669.71 |
| Farm products..... | 1,660.21 |
| Miscellaneous..... | 374.90 |
| Total..... | 24,704.82 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 56-63 and Annual Reports for 1894 and 1895.

Bulletin 56, pp. 14.—*Analyses of Commercial Fertilizers.*—Tabulated analyses and valuation of 120 samples of commercial fertilizers, with explanatory notes.

Bulletin 57, pp. 12.—*Wheat Experiments.*—*Oat Experiments.*—A report on variety and fertilizer tests with wheat and oats, and seeding experiments with wheat.

Bulletin 58, pp. 21.—*Cutworms in Kentucky.*—Descriptive and life-history notes on 2 species.

Bulletin 59, pp. 17.—*Spraying Experiments in 1895.*—Results of spraying experiments for checking the apple rot and codling moth, with a chemical examination of the sprayed fruit for copper and arsenic.

Bulletin 60, pp. 10.—*Analyses of Commercial Fertilizers.*—Tabulated analyses and valuation of 63 samples of fertilizers, with explanatory notes.

Bulletin 61, pp. 40.—*Potatoes.*—Report on fertilizer and variety tests and on spraying experiments for insect pests and fungus diseases.

Bulletin 62, pp. 13.—*Straubberries.*—Brief cultural and descriptive notes on 40 varieties.

Bulletin 63, pp. 30.—*Tobacco.*—Results of fertilizer and spraying experiments.

Annual Report for 1894, pp. 209.—Reports on the work of the year by the director and heads of departments, including the chemical analyses of fertilizers, cane juices, soils, and miscellaneous materials, descriptive and life-history notes on a number of insects, with a list of the night-flying moths of Kentucky, the annual meteorological summary, the food habits of the mole as shown by the analyses of 14 stomachs, a reprint of Bulletins 48-53, and a financial report for the fiscal year ending June 30, 1894.

Annual Report for 1895, pp. 215.—Reports of director and heads of departments on the work of the year, including chemical analyses of sugar beats, mineral waters, and miscellaneous materials; a description of a milk-sampling tube; compiled notes giving a comparison of the butter fat as found in composite and individual samples of milk; entomological summary, a reprint of Bulletins 54-60, and a financial report for the fiscal year ending June 30, 1895.

The Kentucky Station has steadily pursued its work during the year under a uniform and conservative policy, extending its operation only so far as it has additional resources which warrant the undertaking of new enterprises.

LOUISIANA.

No. 1. Sugar Experiment Station, Audubon Park, New Orleans.

No. 2. State Experiment Station, Baton Rouge.

No. 3. North Louisiana Experiment Station, Calhoun.

DEPARTMENT OF LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE.

The three Louisiana stations continued their work during the year largely in the same lines as heretofore, some of the principal lines of investigation being as follows:

Sugar Station.—Investigations on the breeding, fertilizing, culture, and improvement of sugar cane, and the manufacture of cane sugar; field experiments with cotton and other fiber plants and with grain and forage crops; chemical and other studies of soils; bacteriological investigations of diseases of sugar cane; experiments in drainage and irrigation, etc.

State Station.—Field experiments with cotton, tobacco, and other crops, including rotation experiments; testing of varieties of horticultural plants; experiments in raising winter vegetables under glass; feeding experiments, with special reference to the utilization of molasses; poultry raising; botanical and entomological investigations, etc.

North Louisiana Station.—Field experiments with tobacco, corn, cotton, and other crops; horticultural experiments; feeding experiments; practical work in dairying to aid the development of the industry, etc.

Work in connection with the State Geological Survey still devolves upon the station at New Orleans, the expenses being provided for by the State. The Sugar School has been given up, but opportunity is still afforded for the training of experts in sugar manufacture in connection with the operations of the sugarhouse. The three days' fair and camp meeting for farmers held at the North Louisiana Station continues to attract large numbers of farmers and helps to bring the station into cordial relations with its constituents.

The income of the stations was as follows:

| | |
|---|-------------|
| United States appropriation..... | \$15,000.00 |
| State appropriations..... | 18,000.00 |
| Individuals (Sugar Planters' Association)..... | 2,624.75 |
| Fees for analyses of fertilizers and paris green..... | 4,395.94 |
| Farm products..... | 499.88 |
| Miscellaneous..... | 3,721.23 |

Total..... 44,241.80

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of these stations received during the fiscal year were Bulletins 34-40 and the Annual Report for 1895.

Bulletin 34, pp. 33.—*Cattle Feeding, With Results of Trials.*—A report on experiments in fattening home-raised cattle, together with some general formulas for compounding suitable feeding rations.

Bulletin 35, pp. 30.—*Report for 1894.*—Report on the work of the North Louisiana Station for the year ending December 31, 1894. The

report includes the results of variety tests and of field and fertilizer experiments with cotton, corn, oats, barley, forage crops, and rice.

Bulletin 36, pp. 47.—Horticulture, Results of the Year 1894.—The results of variety tests of vegetables, potatoes, and fruits at the three stations.

Bulletin 37, pp. 38.—Windrowed v. Standing Canes.—The results of three years' work in comparing early-cut, late-cut, and windrowed sugar cane, with a view to ascertaining some means of prolonging the grinding period.

Bulletin 38, pp. 77.—Chemistry of Sugar Cane and Its Products.—A report on extended investigations carried on at the sugar station, embraced under the following heads: Dextrin, one of the gums of the sugarhouse; a study of the constituents of nodes and internodes; the estimation of crude fiber in sugar cane; pedigreeing of cane—tops from tops; effect of fertilizers upon sugar cane; organic solids not sugar in cane juices; sulphurous acid, acid phosphate, and lime as clarifying agents, and fermentation of cane juices.

Bulletin 39, pp. 22.—Analyses of Commercial Fertilizers.—Tabulated analyses of 79 samples of fertilizing materials, with explanatory notes on the valuation and sources of nitrogen, phosphoric acid, and potash in fertilizers, and a list of licenses issued.

Bulletin 40, pp. 30.—Cowpea: Origin, Botanical Relation, Chemical Composition, Feeding Value, Restorative Virtue to the Soil, etc.—A popular bulletin on the cowpea, presenting the results of original and compiled investigations.

Annual Report for 1895, pp. 8.—Brief report on the operations of the stations for the calendar year, and a financial statement for the fiscal year ending June 30, 1895.

The operations of the Louisiana stations continue to be conducted on a large scale and with special reference to the agricultural conditions of the State. The stations are firmly established in the confidence of the farmers, and especially of the sugar planters, as is evidenced by the continuance of financial aid from the Sugar Planters' Association. The funds given by the National Government for agricultural investigations in Louisiana are also liberally supplemented by State appropriations.

MAINE.

Maine State College Agricultural Experiment Station, Orono.

DEPARTMENT OF MAINE STATE COLLEGE.

The Maine Station has continued investigations on the food and nutrition of domestic animals, including the influence of the ration on the growth and composition of the animal body and feeding experiments with milch cows, horticultural experiments, botanical and entomological investigations, and work in veterinary science and practice. The station has also conducted the fertilizer analysis and inspection, under a State law which provides for the expenses of this work. A recently enacted State law makes the director of the station responsible for the inspection of the graduated glassware used in creameries in determining the fat content of milk and cream. The station has cooperated with this Department in investigations on the food and nutrition of man. At the close of the year the director resigned to assume the directorship of New York State Station, and the vice-director of the Connecticut Storrs Station was chosen to fill the vacancy.

The income of the station was as follows:

| | |
|-----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Fees for fertilizer analyses..... | 1,846.59 |
| Farm products..... | 426.86 |
| Miscellaneous..... | 750.00 |
| Total..... | 18,023.45 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of the station received during the fiscal year were Bulletins 20-29 and the Annual Report for 1894.

Bulletin 20, pp. 4.—A Discussion of Certain Commercial Articles.—Results of investigations of several samples of “condimental” or patent foods.

Bulletin 21, pp. 4.—Notes on Small Fruits.—Brief cultural notes on the strawberry, with a descriptive list of 28 varieties grown at the station.

Bulletin 22, pp. 9.—Inspection of Fertilizers.—Tabulated analyses of 84 samples, with explanatory notes on valuation.

Bulletin 23, pp. 4.—Preservation of Cream for Market.—Brief popular notes on this subject.

Bulletin 24, pp. 4.—Cabbages.—Brief cultural notes based on investigations at the station.

Bulletin 25, pp. 16.—Inspection of Fertilizers.—Descriptive list of 63 samples of fertilizers licensed and analyzed for 1896.

Bulletin 26, pp. 4.—Inspection of Glassware Used by Creameries and Butter Factories to Determine the Value of Cream and Milk.—Results of investigations on the accuracy of measuring bottles, burettes, pipettes, etc., used in estimating butter fat by the Babcock method, with the text of the State law on this subject.

Bulletin 27, pp. 4.—Peas.—Sweet Corn.—Results of tests of varieties.

Bulletin 28, pp. 4.—Potato Rot; Bordeaux Mixture and Fungicoid as Preventives.—Results of experiments in checking potato rot with these two fungicides.

Bulletin 29, pp. 4.—Notes on Spraying.—Popular notes on when and why to spray, with spraying-mixture formulas.

Annual Report for 1894, pp. 174.—Reports by the director and heads of departments on the work of the year, including the following subjects: Miscellaneous chemical analyses; field experiment with fertilizers; digestion experiment with timothy hay and silage on sheep; feeding experiment with milch cows; notes on vegetables, small fruits, plant breeding, insects, diseases, remedies, etc.; a popular article on tuberculin as a diagnostic agent; a reprint of Bulletins 6-16, and a financial statement for the fiscal year ending June 30, 1894.

During the past year the Maine Station pursued the same careful and conservative policy which has hitherto characterized its operations. Its work has been concentrated on a few lines, and its investigations, especially in problems of nutrition, have been thorough and useful. A change of director has not resulted in any radical change in the policy of the station. Its principal work will continue to be in nutrition investigations. The work in horticulture will be developed with special reference to the needs of the State.

MARYLAND.

Maryland Agricultural Experiment Station, College Park.

DEPARTMENT OF MARYLAND AGRICULTURAL COLLEGE.

The work of the Maryland Station during the past year has included chemical investigations, especially of feeding stuffs; soil studies; field experiments with wheat and other crops; horticultural experiments; entomological investigations, and work in dairying. Under a recently enacted law the station entomologist acts as State entomologist, his expenses while acting in that capacity being paid from State funds. A veterinarian has recently been added to the station staff, receiving compensation, however, only for special services. The soil investigations are conducted in cooperation with this Department. The State fertilizer inspection continues to be made by the college with which the station is connected, and the results are published by the station. The station has erected and equipped a dairy building, and is making some practical experiments in the management of a creamery. The work in horticulture consists very largely of the testing of varieties.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products | 693.21 |
| Miscellaneous..... | 656.99 |
| Total..... | 16,350.20 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 34-37.

Bulletin 34, pp. 52.—Commercial Fertilizers.—Tabulated analyses and valuations of 756 samples of fertilizing materials, with a list of fertilizers licensed for sale in Maryland for the year 1895, and a schedule of trade values.

Bulletin 35, pp. 8.—Wheat, Barley, Oats, and Hay Experiments.—Results of culture experiments with barley and oats, liming experiments with hay, and a test of varieties of wheat.

Bulletin 36, pp. 13.—Steer Feeding.—Results of investigations in feeding a well-balanced *v.* a poorly balanced ration.

Bulletin 37, pp. 50.—Commercial Fertilizers.—Tabulated analyses and valuations of 440 samples, with a list of the fertilizers licensed for sale in 1896.

The Maryland Station is developing its work on soils, dairying, dairy farming, and entomology, and the outlook for increased success in these lines is good. The unwise plan of annual elections of station officers is still followed. The establishment of a system of farmers' institutes under direction of the agricultural college is contributing toward greater interest in the affairs of the station on the part of Maryland farmers.

MASSACHUSETTS.

Hatch Experiment Station of the Massachusetts Agricultural College,
Amherst.

DEPARTMENT OF THE MASSACHUSETTS AGRICULTURAL COLLEGE.

In accordance with a State law passed in 1894 and amended in 1895, the consolidation of the Hatch and State stations went into effect during

the past year. Work has continued in the analysis and inspection of commercial fertilizers; field experiments with fertilizers on different crops and with leguminous crops as sources of nitrogen; variety, fertilizers, and culture experiments with corn, potatoes, forage plants, etc.; feeding and digestion experiments and dairy studies; horticultural experiments; entomological investigations; studies of beneficial and injurious fungi and of nematode worms, and meteorological observations. The work of the recently reestablished department of botany is being rapidly developed along the lines of vegetable physiology and pathology. The facilities for work on the nutrition of domestic animals have been improved, and the work in this line is being strengthened. A large addition is being made to the chemical laboratory which will afford greatly increased facilities for chemical investigations. An effort is being made to develop the meteorological work of the station along agricultural lines. The station entomologist is performing important services in connection with the efforts which the State is making to repress the gypsy moth.

The income of the station was as follows:

| | |
|------------------------------------|-------------|
| United States appropriation | \$15,000.00 |
| State appropriations | 11,704.37 |
| Fees for fertilizer analyses | 3,627.17 |
| Farm products | 1,204.46 |
| Miscellaneous | 733.64 |
| Total | 32,269.64 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the year were *Bulletins 30-39*, the *Annual Report for 1895*, *Meteorological Bulletins 78-89*, and an index to the station publications, 1888-1895.

Bulletins 30, 31, 32, pp. 8 each.—*Commercial Fertilizers.*—Tabulated analyses of 241 samples of fertilizing materials, with a schedule of trade values for 1895.

Bulletin 33, pp. 8.—*Glossary of Fodder Terms.*

Bulletin 34, pp. 8.—*Commercial Fertilizers.*—Tabulated analyses of 83 samples of fertilizing materials.

Bulletin 35, pp. 24.—*The Agricultural Value of Bone Meal.*—Summary of data established by Wagner, Steffek, Maercker, and others on this subject.

Bulletin 36, pp. 20.—*Imported Elm-leaf Beetle, Maple Pseudococcus, Abbot Sphinx, San José Scale.*—Descriptive, life-history and remedial notes on the above insects, largely compiled.

Bulletin 37, pp. 40.—*Report on Fruits, Insecticides, and Fungicides.*—Results of variety tests with various fruits, brief notes on insecticides and fungicides, and a spraying calendar for 1896.

Bulletin 38, pp. 16.—*Fertilizers and Paris Green.*—A general discussion on fertilizers; analyses of fertilizing materials sent on for examination; observations regarding the composition of paris green, including chemical analyses, and observations concerning the action of muriate of potash on the lime constituents of the soil.

Bulletin 39, pp. 21.—*Economic Feeding of Milch Cows.*—A general discussion on the principles of nutrition and the classification of feeding stuffs.

Meteorological Bulletins 78-89, pp. 4 each.—Notes on the weather and summaries of observations at the meteorological observatory at the

station for the months of June, 1895, to May, 1896, inclusive, with an annual summary for the year 1895 in the December bulletin.

Annual Report for 1895, pp. 185.—History of the consolidation of the State and Hatch stations, with reports by the heads of departments, including the results of miscellaneous variety tests of farm and garden crops; field experiments with leguminous crops and mixed forage crops; fertilizer experiments with various phosphates and other commercial fertilizers; feeding experiments with milch cows, pigs, and poultry; chemical analyses of fodders, water, and dairy products; extensive compiled chemical analyses of miscellaneous materials; a list of manufacturers and dealers licensed to sell commercial fertilizers in the State for the year ending April 30, 1896; and a financial statement for the fiscal year ending June 30, 1895.

Index 1888-1895, pp. 29.—An index to all bulletins and annual reports published to June, 1895.

The consolidation of the two stations in Massachusetts into one organization has strengthened the station enterprise in that State and promises to make the work of agricultural investigation carried on at Amherst even more efficient and successful than it has been hitherto. The new work which has been undertaken is along lines of scientific effort in behalf of agriculture which give great promise of useful results of general importance to our farmers. This station continues to enjoy the liberal support of the State, and its outlook for increased usefulness is very encouraging.

MICHIGAN.

Experiment Station of Michigan Agricultural College, Agricultural College.

DEPARTMENT OF MICHIGAN AGRICULTURAL COLLEGE.

The work of the Michigan Station during the past year has included field experiments with wheat, forage plants, and other crops; feeding experiments, especially with dairy cattle and lambs; horticultural experiments; fertilizer analysis and inspection; chemical studies of wheat, forage plants, etc.; entomological investigations and experiments with bees; botanical studies; and investigations in veterinary science. Special attention is being given to investigations of wheat and forage plants which involve the cooperation of different departments of the station. Studies in bacteriology are being developed, especially along the lines of veterinary science and dairying. The membership of the board of control has been changed somewhat during the year, and its policy has been modified in the direction of giving less attention to the details of station management. The president of the college was changed during the year, but the relations of this officer to the station remained the same as heretofore.

The income of the station was as follows:

| | |
|-------------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Fees for fertilizer inspection..... | 1,380.00 |
| Farm products..... | 1,445.28 |
| Miscellaneous..... | 2,848.33 |
| Total..... | 20,673.61 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of this station received during the fiscal year were Bulletins 125-132, Special Bulletins 1 and 2, and the Annual Report for 1894.

Bulletin 125, pp. 40.—Crimson Clover and Other Topics.—Compiled letters from 36 farmers throughout the State on the growing of crimson clover, with a list of the common names of clover in the English, German, and French languages, and the results of investigations in sowing clover every month in the year, growing alfalfa, harvesting wheat at successive stages of ripeness, planting at different depths, and on the temperatures of different soils.

Bulletin 126, pp. 16.—Fertilizer Analyses.—Information regarding the fertilizer inspection and tabulated analyses of 60 samples of fertilizing materials.

Bulletin 127, pp. 44.—Dairy Records.—Station dairy herd records for the year, including kinds and amounts of food fed, with descriptive notes on the Babcock test and a discussion on its application to the dairy industry.

Bulletin 128, pp. 19.—Fattening Lambs.—Results of feeding experiments with 80 lambs.

Bulletin 129, pp. 46.—Fruits at South Haven.—Notes and tabulated data on various varieties of orchard and small fruits tested at South Haven in 1895.

Bulletin 130, pp. 13.—Fruits at the Agricultural College.—Descriptive notes and tabulated data on a number of varieties of small fruits.

Bulletin 131, pp. 36.—Potatoes; Vegetable Tests.—Tests of 85 varieties of potatoes and numerous varieties of vegetables, with brief cultural and descriptive notes.

Bulletin 132, pp. 30, figs. 21.—Some Injurious Insects.—Illustrated, descriptive, life-history, and remedial notes on climbing cutworms, granary insects, carpet beetles, and clothes moths.

Annual Report for 1894, pp. 367.—Short reports by the director and heads of departments, including the results of a year's experiments with bees by the apiarist and reprints of Bulletins 101-110, Special Bulletins 1 and 2, and press bulletins on the army worm, prickly lettuce, prevention of stinking smut of wheat, Russian thistle, and doubtful substitutes for clover, with a financial statement for the fiscal year ending June 30, 1894.

The Michigan Station is carrying on a large amount of useful work, and the present tendency seems to be in the direction of a more liberal policy of management and greater concentration of work. Clearer definition of the duties and responsibilities of the different officers and some relief from the time-consuming and exhaustive work involved in the management of a large farm by officers engaged in both college and station would, it is believed, be greatly to the advantage of the experiment-station enterprise in Michigan.

MINNESOTA.

Agricultural Experiment Station of the University of Minnesota, St. Anthony Park.

DEPARTMENT OF THE UNIVERSITY OF MINNESOTA.

The work of the Minnesota Station during the past year has included field experiments with grain and forage crops, flax grown for fiber and for seed, management of meadows and pastures, rotation of crops, etc.;

horticultural and forestry investigations; entomological investigations, special attention being given to the chinch-bug disease; chemical studies of soils, potatoes, flax, etc.; feeding experiments with dairy cows and experiments in cheese making; studies in veterinary science and practice, including especially experiments with tuberculin and hypodermic cathartics; feeding experiments with beef cattle, sheep, and pigs; pasturage experiments with sheep, and experiments in crossing sheep. Through the liberality of the State legislature the buildings and other facilities of the station were enlarged and improved. A State appropriation of \$30,000 for the purchase, equipment, and two years' maintenance of experiment farms in different parts of the State has been available during the past year. Two experiment farms have been established with this fund, one at Crookston and the other at Grand Rapids. The farms were donated by competing localities, together with a money bonus to be used toward their equipment. A variety of experiments has already been undertaken at these farms. Cooperative experiments are also carried on at a farm near Camden. The station has cooperated with this Department in nutrition investigations.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 11,262.75 |
| Total..... | 26,262.75 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 41-46.

Bulletin 41, pp. 79, figs. 12.—Soils.—A report on investigations on the essential elements of soil fertility; humus as a factor of soil fertility; the chemical and mechanical analyses of soils; the action of organic and mineral acids upon soils, and comparisons of different methods of farming upon the conservation of soil fertility.

Bulletin 42, pp. 14, fig. 1.—Composition, Digestibility, and Food Value of Potatoes.—Results of investigations along these lines.

Bulletin 43, pp. 153, figs. 73.—Insects Injurious in 1895.—Accounts of experiments with infectious diseases among chinch bugs; notes on migratory locusts; insects attacking potatoes, cabbages, currants, shade trees, and some other economic plants, and on the Hessian fly, plant lice, and scale insects.

Bulletin 44, pp. 39.—Fattening Steers; Fattening Lambs in Winter.—Results of feeding experiments.

Bulletin 45, pp. 30, figs. 8.—Potatoes, Tomatoes, Small Fruits, and Spraying Apparatus.—Results of variety tests and spraying experiments, with brief descriptive notes and a model of a new spray pump and strainer.

Bulletin 46, pp. 62, figs. 2.—A report on variety tests of various forage and grain crops; experiments in treating wheat for the prevention of smut; cross rotation experiments; popular notes on three annual weeds; tillage experiments, and meteorological records for 1895.

The Minnesota Station has enjoyed a year of great prosperity. It is developing investigations in a number of lines of great importance to the agriculture of a large region of the Northwest. The liberality of the State has enabled it to establish experiment farms in different localities. These seem to have been wisely located, and they will be utilized especially for experiments for the development of the agriculture of

their respective localities and for the demonstration on a practical scale of results obtained at the central station. The fund given by the National Government can thus be expended more exclusively for original investigations along scientific lines related to agriculture, and, as supplemented by State funds, should be productive of greater benefit to the farmers of Minnesota.

MISSISSIPPI.

Mississippi Agricultural Experiment Station, Agricultural College.

DEPARTMENT OF MISSISSIPPI AGRICULTURAL AND MECHANIC COLLEGE.

The work of the Mississippi Station during the past year has included botanical studies on cotton, grasses, etc.; variety, fertilizer, and culture experiments with cotton, corn, grasses, and forage plants; feeding experiments with cattle and pigs; horticultural investigations; chemical and physical studies of soils; entomological investigations; studies in veterinary science and practice. The policy is to concentrate the work of the station on a few things. Questions relating to fruits and to animal husbandry will receive especial attention. Cooperative experiments have been carried on at several places at relatively small expense.

The income of the station was as follows:

| | |
|-----------------------------------|-------------|
| United States appropriation | \$15,000.00 |
| Fees | 10.50 |
| Farm products | 1,738.67 |
| Miscellaneous | 880.40 |
| Total | 17,629.57 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 34-37.

Bulletin 34, pp. 43.—*Mississippi Fungi.*—A list of the fungi collected by the authors, embracing 113 genera and 350 species, with critical notes.

Bulletin 35, pp. 19.—*Hog Raising.*—A popular article dealing with breeds, selection of stock, care, and feeding.

Bulletin 36, pp. 13, figs. 14.—*Insects Injurious to Corn.*—Popular compiled bulletin containing illustrated, descriptive, life-history, and remedial notes on insects injurious to corn.

Bulletin 37, pp. 24.—*Fruits and Vegetables on the Gulf Coast.*—Results of extensive cultivation of various fruits and vegetables at the Ocean Spring substation to ascertain their value in that latitude.

The operations of the Mississippi Station continue to be conducted in a conservative and systematic manner along lines of great usefulness to the agriculture of the State.

MISSOURI.

Missouri Agricultural College Experiment Station, Columbia.

DEPARTMENT OF THE COLLEGE OF AGRICULTURE AND MECHANIC ARTS OF THE UNIVERSITY OF THE STATE OF MISSOURI.

A permanent director and agriculturist was appointed to fill the vacancy caused by the death of a former director. The past year has

necessarily been a time of partial reorganization of the work of the station. The facilities for horticultural investigations have been greatly increased by the erection of a horticultural laboratory at a cost of \$5,000, which is largely used for station work. A department of entomology has been added to the station and good facilities for work in this line have been provided.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Fees..... | 356.96 |
| Farm products..... | 913.83 |
| Miscellaneous..... | 1,323.26 |
| Total..... | 17,594.05 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 28-33 and Circular of Information No. 3.

Bulletin 28, pp. 38, figs. 7.—*Feeding Tests with Different Breeds of Beef Cattle.*—A popular summary of technical Bulletins 24 and 25 of the station.

Bulletin 29, pp. 18.—*Feeding Wheat to Pigs.*—Results of experiments carried on at the station.

Bulletin 30.—*Spray Calendar.*—Reprint of New York Cornell Station spray calendar.

Bulletin 31, pp. 20.—*Spraying Orchards and Vineyards.*—A spray calendar, with results of spraying experiments on orchards and evergreens.

Bulletin 32, pp. 30.—*Field Experiments with Corn.*—Results of variety tests and fertilizer and cultural experiments.

Bulletin 33, pp. 24.—*Inquiry into the Principles of Potato Growing and Tests of Varieties.*—Popular notes on potato culture, with results of variety tests and cultural experiments.

Circular of Information No. 3, pp. 10.—*The San José Scale.*—Popular compiled notes on this insect.

The Missouri Station has materially developed and strengthened its operations during the past year. The station is now relieved from the management of a large farm, has increased facilities for its work, and enjoys an encouraging outlook.

MONTANA.

Montana Agricultural Experiment Station, Bozeman.

DEPARTMENT OF MONTANA AGRICULTURAL COLLEGE.

The work of the Montana Station during the past year has included field experiments with wheat, oats, peas, potatoes, and other crops; horticultural experiments; irrigation investigations; chemical studies, and investigations in veterinary science and practice.

The agriculturist, irrigation engineer, and veterinarian resigned their positions at the close of the year.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 1,235.32 |
| Total..... | 16,235.32 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of the station received during the fiscal year were Bulletins 6-9.

Bulletin 6, pp. 22, figs. 7.—Measurement of Water.—Compiled information on the fertilizing value of irrigation water, the duty of water, the measurements of water for irrigation purposes, and devices for measuring and dividing water, with tables showing the discharge over rectangular and trapezoidal weirs.

Bulletin 7, pp. 15.—Small Grains and Potatoes.—Results of field experiments with small grains and potatoes, chemical analyses of the soil, and of the wheat, barley, and potatoes grown.

Bulletin 8, pp. 30.—Annual Report for the fiscal year ending June 30, 1895. Brief reports by the director and heads of departments on the work of the year, including the results of investigations by the veterinarian on the parasitic ictero hæmaturia of sheep.

Bulletin 9, pp. 22.—Potatoes.—Compiled information on potato culture, with the results of variety tests and of scab and cultural experiments.

The affairs of the Montana Station have not been in a satisfactory condition during the past year, largely owing to the lack of harmony in the staff of the station. The resignation of three officers at the close of the year has temporarily weakened the station in a marked degree. The station continues to be hampered by the lack of funds on the part of the college with which it is connected.

NEBRASKA.

Agricultural Experiment Station of Nebraska, Lincoln.

DEPARTMENT OF THE UNIVERSITY OF NEBRASKA.

The work of the Nebraska Station during the past year has included studies of soils, with special reference to problems relating to soil moisture; field experiments with sugar beets and forage plants; horticultural and forestry investigations; botanical studies of grasses, forage plants, fungi, and weeds; chemical analyses, especially of sugar beets; veterinary investigations, especially of hog cholera, tuberculosis, and black-leg in horses; irrigation studies, with special reference to water supply and use of windmills, and meteorological observations.

The resignation of director and agriculturist, July 1, 1895, which was compelled by protracted illness, finally resulting in his death, was followed by the appointment of the chancellor of the university as director. The assistant agriculturist was appointed agriculturist. A secretary was appointed near the close of the year, who conducts much of the routine executive business of the station. The station has begun to make soil studies a prominent feature of its work. This is carried on with the cooperation of several divisions of the station, and also of this Department. Studies in irrigation have been conducted in connection with the United States Geological Survey. The work in horticulture is being developed along more scientific lines. The station has for some time managed a State weather and crop service in cooperation with the Weather Bureau of this Department, but the station will be relieved of this work, which is hardly its proper function.

The income of the station was as follows:

| | |
|----------------------------------|------------------|
| United States appropriation..... | \$15,000.00 |
| Miscellaneous..... | 516.04 |
| Total..... | 15,516.04 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of the station received during the fiscal year were Bulletins 43 and 44 and the Annual Report for 1895.

Bulletin 43, pp. 7, figs. 3.—*The Conservation of Soil Moisture by means of Subsoil Plowing.*—Results of investigations at the station and by a farmer at Geneva, Nebr.

Bulletin 44, pp. 17, diagrams 2.—*Experiments in the Culture of the Sugar Beet in Nebraska.*—Results of cultural investigations at the stations and of the chemical analyses of a large number of samples from all over the State.

Annual Report for 1895, pp. 35.—Brief reports by director and heads of departments on the work of the year, with a bibliography of the station literature and a financial statement for the fiscal year ending June 30, 1895.

The partial reorganization of the station necessitated by a change of director and agriculturist, combined with the failure of crops due to drought in 1895, temporarily hindered the progress of this station. The management of a farm of 320 acres is still a great burden on the station, which, however, it is hoped will be removed in the near future. On the whole the present outlook of the station is decidedly encouraging. The tendency is in the direction concentration of work on problems of vital importance to the agriculture of the State, with a view to making thorough and scientific investigations.

NEVADA.

Nevada Agricultural Experiment Station, Reno.

DEPARTMENT OF NEVADA STATE UNIVERSITY.

The work of the Nevada Station during the past year has included field experiments with different crops; horticultural investigations; studies in botany and entomology; chemical analyses; investigations of animal diseases, and experiments in dairying. In October, 1895, the State Agricultural Society transferred to the station the agricultural fair grounds and a tract of well-watered land comprising about 82 acres, which was thus made available for experimental purposes.

The income of the station was as follows:

United States appropriation..... \$15,000

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of the station received during the fiscal year were Bulletins 25-29.

Bulletin 25, pp. 53.—*Irrigation.*—Compiled information regarding different systems of irrigation, pumping and storage of water, and the measurement and division of water, with results of irrigation experiments at the station with wheat, oats, and potatoes.

Bulletin 26, pp. 25.—*Feeding Stuffs.*—Explanatory notes and compiled tables showing composition and digestion coefficients of a large number of American feeding stuffs, with tabulated analyses of several fodder articles.

Bulletin 27, pp. 12.—*Grains and Potatoes.*—Results of investigations

on thick and thin seeding of grain and on planting potatoes at different dates.

Bulletin 28, pp. 6, figs. 3.—An Important Elm Insect.—A preliminary report on the elm-bark louse, with an account of its appearance at Carson City.

Bulletin 29, pp. 6, figs. 4.—The San José Scale.—A short popular article giving the main facts in the life history of this pest, with suggestions as to treatment.

NEW HAMPSHIRE.

New Hampshire College Agricultural Experiment Station, Durham.

DEPARTMENT OF NEW HAMPSHIRE COLLEGE OF AGRICULTURE AND THE
MECHANIC ARTS.

The work of the New Hampshire Station during the past year has included feeding experiments with dairy cattle; experiments with field crops; horticultural investigations, especially testing of varieties; fertilizer analysis and inspection; chemical studies of cattle foods and other materials; bacteriological and entomological investigations; creamery work and studies; meteorological observations, and experiments in road making.

Early in the year an agriculturist and horticulturist was appointed to fill a vacancy caused by the resignation of the agriculturist. The chemist has been made vice-director and has been given charge of much of the administrative business of the station.

The income of the station was as follows:

| | |
|-------------------------------------|------------------|
| United States appropriation | \$15,000.00 |
| Fees for fertilizer inspection..... | 558.00 |
| Farm products..... | 623.67 |
| Total | 16,181.67 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 27-34.

Bulletin 27, pp. 16.—Spraying Experiments in 1894.—Results of spraying experiments with orchard fruits and potatoes.

Bulletin 28, pp. 4, fig. 1.—Remedies for the Horn Fly.—Description and life-history notes on the horn fly, with suggestions as to remedies.

Bulletin 29, pp. 6, figs. 6.—Remedies for Flea Beetles.—Popular illustrated notes on these insects, with suggestions as to remedies.

Bulletin 30, pp. 17, plates 5.—An Experiment in Road Making.—Report on details and cost of a road-making experiment at the station.

Bulletin 31, pp. 22, figs. 6.—Seventh Annual Report.—Reports by director and heads of departments on the work of the year, including an account of tuberculin tests on the station herd, and a financial statement for the fiscal year ending June 30, 1895.

Bulletin 32, pp. 14, figs. 2, diagrams 2.—Studies of Maple Sap.—Results of experiments and investigations at the station with the sugar analyses of a number of samples of sap.

Bulletin 33, pp. 7, figs. 4.—Two Shade-tree Pests.—Popular and remedial notes on the white marked tussock moth and the sugar-maple borer.

Bulletin 34, pp. 25, figs. 8.—Surface and Sub-Irrigation Out of Doors.—A popular article on this subject, with the results of investigations at the station.

Owing to changes in the station staff and to other circumstances, the past year has been a period of partial reorganization of the operations of the New Hampshire Station. The station still continues to bear the burden of the general management of a farm of 315 acres and the maintenance of a large dairy herd and a creamery. The area of the farm actually used for experiments is, however, less than 40 acres and progress has been made in the differentiation of college and station business as related to the farm. The station is doing useful work in a number of lines and with a readjustment of its farm and dairy operations may easily strengthen its work to a material degree.

NEW JERSEY STATIONS.

New Jersey State and College Agricultural Experiment Stations, New Brunswick.

CONNECTED WITH RUTGERS COLLEGE.

The work of the New Jersey State and College stations being now connected under the general supervision of the same director and their publications being issued in one series, it is most convenient to consider them together. The operations of these stations during the past year were along the following lines: Analysis and inspection of commercial fertilizers; field experiments with fertilizers on cereals, vegetables, and fruits, and in green manuring and rotation; horticultural investigations; studies on the food and nutrition of man; investigations on the use of tuberculin; irrigation experiments; studies of plant diseases and their remedies, and entomological investigations. Land belonging to the college has been made available to the stations for experimental purposes and the work of the stations in horticulture and dairying is being broadened. Greenhouses have been erected and an experimental orchard has been begun. The State Station has cooperated with this Department in investigations on the food and nutrition of man.

The income of the stations was as follows:

| | |
|-----------------------------------|-------------|
| State Station: | |
| State appropriations | \$15,998.72 |
| College Station: | |
| United States appropriation | 15,000.00 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the New Jersey stations received during the fiscal year were *Bulletins 110-115* and the *Annual Reports for 1894 and 1895*.

Bulletin 110, pp. 6, figs. 2.—The Hessian Fly.—Popular descriptive, life history, and remedial notes on this insect.

Bulletin 111, pp. 9.—“Raupenlein” and “Dendrolene.”—Results of experimental investigations with these insect glues.

Bulletin 112, pp. 18, figs. 6.—Field Experiments with Potatoes.—Results of field experiments with Irish and sweet potatoes for the prevention of scab and rot.

Bulletin 113, pp. 70.—Analyses of Fertilizers.—Discussion and data relating to trade values of fertilizing ingredients in 1895 and analyses and valuations of 576 samples of fertilizing materials.

Bulletin 114, pp. 9.—*Suggestions in Reference to Systematic Methods of Manuring.*—A popular discussion on manuring, with a summary of the results obtained in field experiments.

Bulletin 115, pp. 14, figs. 6.—*Irrigation of Garden Crops.*—Results of investigations at the station.

Annual Report for 1894, pp. 600, figs. 139.—Reports by the director and heads of departments on the work of the year and a financial statement for the fiscal year ending June 30, 1894. The reports of the departments embrace the following: State fertilizer statistics; a study of the commercial and agricultural relations of fertilizers as demonstrated by chemical analyses and field experiments; miscellaneous experiments with asparagus, green manures, and forage crops, and rotations for dairy farms; culture experiments with crimson clover; chemical analyses and compiled tables of fodders and feeds, with popular notes on the sources, composition, and methods of use of gluten feeds; detailed results of tuberculosis investigations as biologist of the State tuberculin commission; extensive field experiments with fungicides; popular, illustrated, and descriptive notes on the Russian thistle and other thistle-like plants and on some of the more injurious fungi of fruits and flowers in 1894; a preliminary report on the poisonous plants of New Jersey; and extensive descriptive, life history, and remedial notes on the field, garden, and orchard insects of the State for 1894.

Annual Report for 1895, pp. 526, figs. 162.—Reports by the director and heads of departments on the work of the year, and a financial statement for the fiscal year ending June 30, 1895. The report embraces the results of fertilizer analyses; a study of household wastes and refuse and sundry materials from the standpoint of fertilizing value; experiments with fertilizers on field crops and cranberries; investigations on the improvement of poor lands by means of green manures, and on the best crop rotations for dairy farms; cultural experiments with crimson clover and Essex rape: a dietary study; investigations on the composition and cost of bread in New Jersey; bakery experiments; fruit statistics obtained by a farm-to-farm canvass of the State; experimental studies of the Koch test for tuberculosis; field experiments with fungicides; brief notes on herbarium work, weeds, poisonous plants, abnormal growth due to fungi; illustrated, descriptive, life history, and remedial notes on the insects prevalent in the State in 1895, and reprints of Bulletins 110, 114, and 115 of the station.

The New Jersey Stations are doing a large amount of practical and scientific work along lines of great importance to the farmers and horticulturists of New Jersey, and enjoy the confidence and support of their constituents. Bringing the two stations into closer connection under the supervision of a single executive head has promoted unity in their operations and tended to strengthen their work. The affairs of these stations are in a prosperous condition and the outlook for their increased success is bright.

NEW MEXICO STATION.

Agricultural Experiment Station of New Mexico, Messilla Park.

DEPARTMENT OF NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

The work of the New Mexico Station during the past year has included field experiments with staple crops grown under irrigation; horticultural investigations; chemical studies of foods and feeding stuffs, and botanical and entomological investigations. Substations

were maintained at Las Vegas and Aztec at a total cost of \$4,774.79. The estimated expense for these substations for the current fiscal year is \$3,600. At the close of the year the director, botanist, and entomologist resigned and their places were filled by a director, biologist, and honorary entomologist. The last-named officer serves without pay except for services rendered on special contract. The station has cooperated with this Department in nutrition investigations.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 110.75 |
| Total | 15,110.75 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 16-18 and the Annual Reports for 1894 and 1895.

Bulletin 16, pp. 18, figs. 2.—Russian Thistle.—A popular bulletin on the appearance, habit, and distribution of this plant, largely compiled.

Bulletin 17, pp. 32.—Principles of Stock Feeding and Some New Mexico Feeding Stuffs.—A popular discussion on the principles of stock feeding, with compiled tables of American feeding stuffs, and analyses and calculated digestibility of a number of New Mexico feeding stuffs.

Bulletin 18, pp. 39, figs. 12.—Some New Mexico Forage Plants.—Illustrated and descriptive notes on 23 forage plants grown in New Mexico.

Annual Report for 1894, pp. 30.—Brief report on the work of the year by the heads of departments and a financial statement for the fiscal year ending June 30, 1894.

Annual Report for 1895, pp. 35.—Brief reports by the director and heads of departments on the work of the year and a financial statement for the fiscal year ending June 30, 1895.

The management of the New Mexico Station had hardly become settled after a change occurring two years ago when agitation ensued for changes in the personnel of the station, apparently based on political considerations. This resulted in the resignation of three officers of the station as stated above. The station is proceeding under its new management on about the same lines as heretofore. The maintenance of the substations has been temporarily continued with a view to affording the Territory an opportunity to come to their aid if they are to be conducted on a permanent basis. It is hoped that a way will be soon found to relieve the United States fund from this burden.

NEW YORK.

New York Agricultural Experiment Station, Geneva.

The work of the New York State Station during the past year has included the analysis and inspection of commercial fertilizers; feeding experiments with dairy cattle; experiments in dairying, especially cheese making; horticultural investigation, including tests of varieties of fruits and vegetables and experiments in plant breeding; studies of plant diseases and their remedies; investigations in entomology, and meteorological observations.

Several changes in the membership of the board of trustees occurred during the year. The position of director became vacant early in the

year and the general management of the station for a number of months devolved upon the chemist, who was designated acting director by the board of control. The director of the Maine Experiment Station was then elected director of this station and entered upon his new duties at the beginning of the current fiscal year. Under special appropriation by the State legislature residences for several members of the station staff have been erected on the station grounds.

Investigations in horticulture, including plant diseases, were conducted on Long Island under a special appropriation.

The income of the station was as follows:

| | |
|----------------------------------|--------------|
| United States appropriation..... | \$1, 500. 00 |
| State appropriation..... | 80, 995. 70 |
| Farm products..... | 1, 460. 37 |
| Total..... | 83, 956. 07 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 90-101, the Annual Report for 1894, and a pamphlet containing a list of the station bulletins.

Bulletin 90, pp. 20.—Feeding Experiments with Laying Hens.—Results of a comparison of rations containing moistened ground grain with others containing dry whole grain.

Bulletin 91, pp. 21.—Small Fruits.—Notes and variety tests of various small fruits, with an account of a new strawberry originated at the station.

Bulletin 92, pp. 55.—Analyses of Commercial Fertilizers.—Analyses and valuations of 260 samples of commercial fertilizers collected during the spring of 1895, with explanatory notes and a short discussion on the influence of different kinds of plant foods upon plants.

Bulletin 93, pp. 12.—Comparative Field Test of Commercial Fertilizers Used in Raising Potatoes.—Results of a preliminary trial made on a farm at Long Island.

Bulletin 94, pp. 132.—Composition and Use of Fertilizers: Science Applied to Feeding Plants.—Partly a revised edition of Bulletin 55, giving a popular summary of information on the following topics: Chemistry of plants, plant food, and soils; material used as fertilizers; purchase and use of fertilizers; arithmetic of fertilizers, and average composition and value of fertilizing materials and of farm crops.

Bulletin 95, pp. 32, figs. 23.—Currants.—Comparative, illustrated, descriptive, and cultural notes on 34 varieties of currants.

Bulletin 96, pp. 45.—Analyses of Commercial Fertilizers.—Tabulated analyses of 288 samples, with explanatory notes, notes on valuation and on the sources of the various fertilizers, and the text of the State fertilizer law.

Bulletin 97, pp. 39.—Corn Silage for Milk Cows.—Explanatory notes and tabulated data giving the results of a number of feeding experiments.

Bulletin 98, pp. 17, pls. 5, fig. 1.—Leaf Spot and Fruit Rot of Plums and Cherries.—Results of spraying experiments for the prevention of cherry-fruit rot, cherry-leaf spot, and plum-leaf spot.

Bulletin 99, pp. 12, pl. 1.—The Spinach Leaf Maggot or Miner.—Results of investigations carried on with a view to ascertaining means of preventing the ravages caused by the spinach-leaf maggot.

Bulletin 100, pp. 33, figs. 2.—Combating Carnation Rust.—Results of an investigation for the prevention of carnation rust.

Bulletin 101, pp. 17.—*Potato Diseases on Long Island in the Season of 1895.*—Results of investigations and spraying experiments.

Annual Report for 1894, pp. 806, figs. 21, pls. 12.—Reports of the director, first assistant director, chemist, horticulturist, meteorologist, and treasurer. The reports embrace the results of extended investigations with different breeds of dairy cattle; experiments in the winter forcing of vegetables; miscellaneous and fertilizer analyses, with notes on valuation, fertilizer control, etc.; meteorological observations; fruit and vegetable tests; investigations in plant breeding for the purpose of originating improved varieties of fruit; a paper on the fertilization of flowers in orchards and vineyards; experiments with remedies for a lecanium scale infesting plum trees in western New York, and reprints of Bulletins 73–83.

The operations of the New York State Station continue to be very extensive and important. Owing to the vacancy existing in the position of director, the past year has been in some respects a period of waiting, though the investigations already undertaken were steadily prosecuted. With the coming of a new director plans are actively being made for the further development and strengthening of the station, and the outlook is very promising for usefulness and success even beyond that hitherto attained.

Cornell University Agricultural Experiment Station, Ithaca.

DEPARTMENT OF CORNELL UNIVERSITY.

The work of the New York Cornell Station during the past year has included horticultural investigations; studies of plant diseases and remedies; entomological investigations; feeding and breeding experiments, especially with sheep and dairy cattle; studies on farm manures and fertilizers; experiments in dairying and with poultry. The operations of this station as related to horticulture and plant diseases have been greatly extended under an act of the State legislature providing funds for special investigations in the western part of the State. Under this law the "experiment station may, with the consent and approval of the commissioner of agriculture, appoint horticultural experts to assist such experiment station in the fifth judicial department in conducting investigations and experiments in horticulture; in discovering and remedying the diseases of plants, vines, and fruit trees; in ascertaining the best means of fertilizing vineyard, fruit, and garden plantations, and of making orchards, vineyards, and gardens prolific; in disseminating horticultural knowledge by means of lectures or otherwise, and in preparing and printing, for free distribution, the results of such investigations and experiments, and such other information as may be deemed desirable and profitable in promoting the horticultural interests of the State." Eight thousand dollars was appropriated for this purpose in 1894 and \$16,000 in 1895. Not only has a large amount of research been conducted under this law and numerous bulletins of information published, but also many meetings and short "horticultural schools" applying university extension methods have been held. Thousands of farmers have thus been personally reached and much popular interest in advanced methods of horticulture and in agricultural research has been awakened.

The income of the station was as follows:

| | |
|----------------------------------|------------------|
| United States appropriation..... | \$13,500.00 |
| State appropriation | 16,000.00 |
| Farm products..... | 850.29 |
| Total | 30,350.29 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department, and has been approved.

The publications of this station received during the fiscal year were Bulletins 95-115, and the Annual Report for 1894.

Bulletin 95, pp. 16, figs. 11.—Winter Muskmelons.—Results of investigations on forcing muskmelons in winter, with cultural notes and brief mention of winter melons for field cultivation.

Bulletin 96, pp. 39, figs. 9.—Forcing House Miscellanies.—Popular notes on the heating and fumigation of forcing houses, the winter forcing of vegetables, and the treatment of carnation rust.

Bulletin 97, pp. 40, pls. 11.—Studies in Artificial Cultures of Entomogenous Fungi.—A study by means of cultures of the life history and relationship of the forms of entomogenous fungi and of the practicability of introducing diseases among insects.

Bulletin 98, pp. 30, figs. 13.—Cherries.—Horticultural and botanical classification of the cherry, including cultural notes and illustrated descriptions of the more prominent varieties.

Bulletin 99, pp. 22, figs. 14.—Blackberries.—Cultural notes on blackberries, with remarks on the botanical relationship of the different varieties, and illustrated descriptions of several of the leading varieties.

Bulletin 100, pp. 36, figs. 27.—Evaporated Raspberries in Western New York.—Cultural notes on the raspberry, with detailed description of methods for evaporating.

Bulletin 101, pp. 20, figs. 7.—Notes About the Spraying of Trees, with Remarks on the Cankerworm.—Popular discussion of the principles and advantages of spraying trees with special reference to the cankerworm.

Bulletin 102, pp. 24, figs. 4.—Care of Fruit Trees.—Popular notes on the care and culture of the orchard, with brief notes on weeds.

Bulletin 103, pp. 17, figs. 2.—Soil Depletion in Respect to the Care of Fruit Trees.—Notes and tabulated data on the results of experiments undertaken to determine the amount of fertilizing ingredients taken from the soil by young and old apple trees and their fruit.

Bulletin 104, pp. 46, figs. 2, pls. 5.—Climbing Cutworms in Western New York.—General notes on cutworms as a class, with additional descriptions and notes on climbing cutworms and remedies.

Bulletin 105, pp. 16.—Tests of Cream Separators.—Records of tests of a large number of machines, with notes.

Bulletin 106, pp. 26, figs. 13.—Revised Opinions of the Japanese Plum.—A supplement to Bulletin 62, giving descriptive and in some cases illustrated notes on 54 varieties of plums.

Bulletin 107, pp. 30, figs. 25.—Wireworms and the Bud Moth.—Illustrated, descriptive, and life-history notes on wireworms and the bud moth, with results of experiments in combating them.

Bulletin 108, pp. 18, figs. 8.—The Pear Psylla and the New York Plum Scale.—The matter contained in Bulletins 44 and 83, with recently discovered facts concerning the life history and treatment of the insects.

Bulletin 109, pp. 32, figs. 24.—Geological History of the Chautauqua Grape Belt.—Results of geological and topographical studies made for the purpose of ascertaining the natural conditions which favor fruit growing in the grape belt of the Erie shore of New York.

Bulletin 110, pp. 40.—Extensive Work in Horticulture.—A report on the progress of the work undertaken by the Cornell University Agricultural Experiment Station in pursuance of the requirements of the experiment station extension law of the State.

Bulletin 111, pp. 40, figs. 13.—*Sweet Peas.*—A general sketch of the history of the sweet pea, brief cultural directions, discussion of the various types of flowers, and a descriptive list of 106 varieties, giving the blooming season.

Bulletin 112, pp. 33, figs. 12.—*The 1895 Chrysanthemums.*—General remarks upon the subject of chrysanthemums, with notes upon the varieties grown at the station.

Bulletin 113, pp. 36, pl. 1, figs. 3.—*Potatoes.*—Results of experiments for the prevention of the scab and other fungus diseases of potatoes, with discussions as to the nature of these diseases.

Bulletin 114, figs. 4.—*Spray Calendar.*

Bulletin 115, pp. 20, figs. 16.—*The Pole Lima Beans.*—Descriptive, comparative, and cultural notes on lima beans as grown at the station.

Annual Report for 1894, pp. 739, pls. 34, figs. 125.—Brief reports by the director and heads of divisions on the work of the year, including reprints of Bulletins 62-83, and a financial statement for the fiscal year ending June 30, 1894.

The affairs of the New York Cornell Station continue to be in a prosperous condition. Its work is carried on with great energy and enthusiasm, and its hold upon the farmers and horticulturists of the State is increasing from year to year.

NORTH CAROLINA.

North Carolina Agricultural Experiment Station, Raleigh.

The work of the North Carolina Station during the past year has included fertilizer analysis and inspection; feeding and digestion experiments with dairy cattle, sheep, and pigs; field experiments with grain and forage crops; poultry experiments; botanical and entomological investigations; horticultural experiments; seed testing, and meteorological observations. Cooperative horticultural experiments are being conducted on quite an extensive scale at Southern Pines with orchard and small fruits and vegetable, the special object being to study the fertilizer requirements of these plants. During the past year, as heretofore, the State weather service was carried on by the station in cooperation with the Weather Bureau of this Department, but recently the station has given up work in this line. Experiments with poultry were undertaken last year, and it is the intention to develop work in this direction.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 9,000.00 |
| Farm products..... | 1,015.01 |
| Total..... | 25,015.01 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 113-125, Meteorological Bulletins 67-79, Special Bulletins 28-38, the Annual Report of the State Weather Service for 1895, and the Annual Report of the station for 1894.

Bulletin 113, pp. 27, figs. 6.—*The Testing of Milk.*—A popular bulletin on the following topics: The Babcock milk test; detection of adulterations in milk; buying and selling cows by tests of their milk, and the practical value of milk testing.

Bulletin 114, pp. 27, figs. 4—Tests of Dairy Implements and Practices.—Results of investigations with a number of separators, creamers, and milk-setting devices.

Bulletin 115, pp. 16, fig. 1.—Miscellaneous Agricultural Topics.—A compilation of the press-service bulletins issued from July 1894, to March, 1895.

Bulletin 116, pp. 12, fig. 1—Milk Records and Tests.—The milk record of the station herd from 1891–1894, inclusive, with results of milking experiments.

Bulletin 117, pp. 14.—Tuberculosis and its Prevention.—Popular article on the nature and treatment of tuberculosis, with results of tuberculin tests with the station herd.

Bulletin 118, pp. 35.—Cotton-seed Hulls and Meal for Beef Production.—Results of feeding investigations carried on at the station, including a discussion of the digestibility of the rations, the effect of meal on the digestibility of hulls, and the fertilizing constituents of the rations recovered in the manure.

Bulletin 119, pp. 22.—Volumetric Estimation of Phosphoric Acid.—A technical article giving methods employed at the station and results obtained.

Bulletin 120, pp. 31, figs. 22.—Cultivation of the Peach Tree.—A popular bulletin on the planting, pruning, and cultivation of the peach, with notes on peach insects and diseases, and methods of treatment.

Bulletin 121, pp. 8, figs. 4.—Hillside Terraces or Ditches.—Directions for the construction of hillside terraces according to methods originated by P. D. Maryum, of Wake Forest, N. C., in 1895.

Bulletin 122, pp. 36.—Types of Tobacco and Their Analyses.—History, culture, description, and classification of tobaccos grown in the United States, with investigations on the development in the plant of nicotin and on the burning qualities and analyses of a number of samples of typical tobaccos.

Bulletin 123, pp. 12.—Miscellaneous Agricultural Topics.—A compilation of the press-service bulletins issued during August, October, and November, 1895.

Bulletin 124, pp. 27.—Fertilizer Analyses of the Fertilizer Control.—Tabulated analyses of a large number of samples of fertilizers, with notes on valuation and explanations of terms.

Bulletin 125, pp. 53, figs. 43.—Forage Grasses and Haymaking.—Variety tests and illustrated descriptions and cultural notes on a number of varieties of forage grasses, with remarks on the formation and care of grass lands, and on tools, implements, and machinery for haying.

State Weather Service Bulletins 67–79, pp. 16 each.—Monthly summaries of meteorological observations by the State Weather Service, cooperating with this Department, from March, 1895, to April, 1896, inclusive, with general remarks on crop conditions for each month.

SPECIAL BULLETINS.

Bulletin 28, pp. 20.—Agricultural Suggestions to the Waldensians.—A popular bulletin on general agricultural topics in the English and French languages.

Bulletins 29, 30, pp. 4 each.—Fertilizer Analyses.—Tabulated analyses of 87 samples of commercial fertilizers.

Bulletins 31, pp. 10; 32, pp. 13; 34, pp. 14; 35, pp. 16; 36, pp. 18.—Fertilizer Analyses.—An abstract of the fertilizer law, explanations of terms used in fertilizer analyses, notes on the valuation of fertilizers,

freight rates from the seaboard to interior points, with tabulated analyses and valuations of 633 fertilizing materials.

Bulletin 33, folio.—Spray Calendar.

Bulletins 37, pp. 21; 38, pp. 3.—Fertilizer Analyses.—Notes and explanations, and tabulated analyses and valuations of 279 samples of fertilizers.

Annual Report of the State Weather Service, pp. I-L, 1-264, maps 26.—Reprint of State Weather Service Bulletins 64-75, lists of meteorological stations and observers and crop correspondents, notes on the distribution of forecasts in the State, and a meteorological summary for the year as compared with previous years (1882-1894), with general remarks on the climate of North Carolina and on the weather and crop conditions during 1895, and charts of normal annual temperature and precipitation for the State.

Annual Report for 1894, pp. 605.—Reports by the director and heads of departments on the work of the year, with reprints of Bulletins 94-110, and a financial statement for the fiscal year ending June 30, 1894.

The operations of the North Carolina Station have been actively and industriously conducted during the past year. The station is doing a large amount of useful work and continues to receive liberal support from the State.

NORTH DAKOTA.

North Dakota Agricultural Experiment Station, Fargo.

DEPARTMENT OF NORTH DAKOTA AGRICULTURAL COLLEGE.

The work of the North Dakota Station during the past year has included soil investigations, botanical studies of wheat; investigations of plant diseases; bacteriological studies of dairy products; veterinary investigations, especially with reference to the effects of feeding millet to horses and dairy stock; horticultural experiments; variety and culture experiments with grain and forage crops, flax, and potatoes; feeding experiments, especially with horses and dairy cattle, and experiments in dairying. The station has cooperated with this Department in nutrition investigations.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 83.34 |
| Farm products..... | 2,386.46 |
| Total..... | 17,469.80 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 20-23 and the Annual Report for 1895.

Bulletin 20, pp. 18.—Winter Rations for Horses.—Grain Rations for Work Horses.—Results of feeding experiments with horses.

Bulletin 21, pp. 20, figs. 6.—Cleanliness in Handling Milk.—Bacteriological Considerations.—Popular statements in regard to the souring and other changes in milk; character of bacteria; sources of germs in milk; care of animals in the stable; pasteurization of milk for home consumption, with illustrations; precautions in regard to typhoid fever, and dairy inspection, together with the results of a number of experiments.

Bulletin 22, pp. 25, figs. 18.—*The Creamery Industry.*—A popular bulletin on modern dairy machinery, the advantages of a creamery, testing of milk, the organization and establishment of cooperative creameries, plan for creamery building, outfit required, etc.

Bulletin 23, pp. 24.—*Grain and Forage Crops.*—Tabulated data on variety tests of a number of farm crops, with brief notes on rotation crops, mixed grain for hay, Dwarf Essex rape, and Kafir corn.

Annual Report for 1895, pp. 14.—Brief reports by the director and heads of departments summarizing the work of the year, and a financial statement for the fiscal year ending June 30, 1895.

The operations of the North Dakota Station during the past year have been conducted under the general supervision of a director, whose term of office began with the fiscal year. The change in director did not, however, affect the general organization of the station. The work has steadily progressed, mainly along the same lines as heretofore, and covers subjects of much importance to the agriculture of the State.

OHIO.

Ohio Agricultural Experiment Station, Wooster.

The work of the Ohio Station during the past year has included variety, fertilizer, culture, and rotation experiments with field crops, especially grain and forage crops; feeding experiments with dairy cattle, calves, and sheep; dairy experiments; horticultural investigations; studies of plant diseases and weeds; and entomological investigations.

A large amount of work has been done during the year in connection with the erection of buildings and the improvement of the farm. Substations have been established in two localities, at which experiments with fertilizers are being conducted. These substations are supported by funds provided by the State. Similar work is being carried on in cooperation with the State University. Cooperative work in the treatment of diseases of the peach is also in progress. A fireproof chemical laboratory has been erected at a cost of about \$15,000, and chemical investigations will be carried on more extensively hereafter. A fireproof stone building for the administrative officers, museum, and library is nearing completion, the total cost being about \$40,000. During the past four years the State has appropriated \$197,300 for the equipment and work of the station.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 52,184.98 |
| Farm products..... | 4,453.74 |
| Total | 71,638.72 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 58-65 and the Annual Report for 1894.

Bulletin 58, pp. 10.—*Meteorological Summary for 1894.*—Notes and tabulated data on meteorological observations, with comparisons of similar data obtained in previous years.

Bulletin 59, pp. 5.—*Noxious Weeds Along Thoroughfares and Their Destruction.*—Brief notes on wayside weeds, with the text of the State weed law.

Bulletin 60, pp. 50, diagrams, 3.—Feeding for Beef.—Results of feeding experiments with steers for beef, with notes on the chemistry of cattle feeding, and on the comparative value of feeding stuffs.

Bulletin 61, pp. 20, figs. 5.—Subirrigation in the Greenhouse.—Results of experiments in subirrigation, with the history of subirrigation; and notes on the construction of greenhouse benches and beds for subirrigation and on the culture of lettuce under glass.

Bulletin 62, pp. 18, figs. 6.—The Grape Root Worm.—Notes on the appearance and life history of *Eidā viticida*, with an account of experiments in combating this pest in 1894 and 1895.

Bulletin 63, pp. 17.—Orchard Spraying; Notes on Varieties of Raspberries.—Principles and methods to be observed in spraying various orchard fruits, with brief notes on a number of varieties of raspberries.

Bulletin 64, pp. 24, pl. 1.—The Smut of Oats and its Prevention.—Historical and botanical discussion on oat smut, with results of experiments for its treatment.

Bulletin 65, pp. 19.—Potatoes.—Comparative and descriptive notes and data on varieties grown at the station, with the results of fertilizer experiments.

Annual Report for 1894, pp. XLIII, figs. 7.—Reports by director and heads of departments on the work of the year, with a financial statement for the fiscal year ending June 30, 1895.

The Ohio Station, while still burdened with the arduous labors attending the erection of buildings and the organization of field experiments on an extensive scale, is carrying on a large amount of useful and important work. The station enjoys the confidence and support of the people of the State, as is clearly indicated by the large appropriations which it receives. With the completion of its buildings its work will undoubtedly be further developed and strengthened to a marked degree in the near future.

OKLAHOMA.

Oklahoma Agricultural Experiment Station, Stillwater.

DEPARTMENT OF OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE.

The work of the Oklahoma Station during the past year has included field experiments with corn, Kafir corn, and other crops; feeding experiments with special reference to the utilization of Kafir corn; horticultural investigations; botanical and entomological studies.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 544.38 |
| Total | 15,544.38 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 17-19.

Bulletin 17, pp. 17, figs. 16.—Oklahoma Weeds.—Popular descriptive notes on an extensive list of weeds, together with suggested methods for their eradication.

Bulletin 18, pp. 15.—Irrigation for Oklahoma.—Popular discussion, with meteorological data, and a report of the Oklahoma delegates to the National Irrigation Congress held at Albuquerque, N. Mex., in 1895.

Bulletin 19, pp. 6.—*Methods of Destroying Chinch Bugs.*—Popular discussion of various methods.

The past year has necessarily been a period of reorganization at the Oklahoma Station. A new director began his labors with the beginning of the fiscal year. Changes have occurred in the station staff and several additional officers have been employed with a view to specializing and strengthening the work. The financial affairs of the station have been put on a sound basis, proper relations between the station and other departments of the college have been established, useful investigations have been undertaken on a systematic plan, and, in general, the outlook for the success of the station in the future is very promising.

OREGON.

Oregon Experiment Station, Corvallis.

DEPARTMENT OF OREGON STATE AGRICULTURAL COLLEGE.

The work of the Oregon Station during the past year has included field experiments with wheat and other crops; feeding experiments; horticultural investigations; entomological studies; chemical investigations of soils, fertilizers, feeding stuffs, etc., and meteorological observations.

The income of the station was as follows:

United States appropriation..... \$15,000

The publications of this station received during the fiscal year were Bulletins 38-42 and the Annual Report for 1894.

Bulletin 38, pp. 25, figs. 16.—*Fruit Pests.*—Results of experiments with combined fungicides and insecticides in 1894-95, illustrated life history and remedial notes on a number of fruit pests, an entomological calendar, and brief notes on beneficial insects and birds.

Bulletin 39, pp. 22.—*A Study in the Economy of Cattle Foods.*—Tabulated analyses and calculated dry and digestible matter per 100 pounds for a number of Oregon fodder plants, with explanation of terms.

Bulletin 40, pp. 37.—*Prunes, Apples, and Pears in Oregon.*—Variety and cultural notes on prunes, apples, and pears, based on data collected in making a survey of the fruit interests of the State.

Bulletin 41, pp. 14.—*Spraying.*—Popular notes on the preparation and use of insecticides and fungicides, with brief descriptions of some of the more injurious insects and fungi.

Bulletin 42, pp. 20.—*Feeding Sheaf Wheat and Potatoes.*—Results of investigations in feeding sheaf wheat to pigs and steers, and in feeding potatoes to pigs.

Annual Report for 1894, pp. 15.—Report of director, containing synopses of reports by heads of departments and a financial statement for the fiscal year ending June 30, 1894.

During the past year the affairs of the Oregon Station have been in a disturbed state. The director and several other officers of the station have been changed. This has necessitated considerable reorganization of the work. Until a more settled policy is pursued the station will remain in a relatively weak condition.

PENNSYLVANIA.

The Pennsylvania State College Agricultural Experiment Station, State College.

DEPARTMENT OF THE PENNSYLVANIA STATE COLLEGE.

The work of the Pennsylvania Station during the past year has included chemical investigations of feeding stuffs and fertilizers; feeding experiments, especially with dairy cows and steers; variety, cultural, and fertilizer experiments with field crops, especially with tobacco; horticultural investigations, and meteorological observations. Experiments with poultry have been undertaken. Special experiments in the culture and curing of tobacco are being continued in cooperation with the State department of agriculture.

The income of the station was as follows:

| | |
|-----------------------------------|-------------|
| United States appropriation | \$15,000.00 |
| State | 1,649.35 |
| Fees for fertilizer analysis..... | 2,187.80 |
| Farm products..... | 9,857.00 |
| Miscellaneous | .79 |
| Total..... | 28,694.94 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 29-34 and the Annual Report for 1894.

Bulletin 29, pp. 37.—Tuberculosis of Cattle.—A comprehensive account of tuberculosis, particularly as affecting cattle, treating of the history, infection, pathology, symptoms, diagnosis, and remedial measures.

Bulletin 30, pp. 17.—Tobacco Experiments.—Results of investigations as to the physical and chemical characters of tobacco soils, of the quality of the cured leaves of the crop grown in 1893, and of the methods of curing the crop of 1894.

Bulletin 31, pp. 20, figs. 13.—Report of the director for 1894.—A reprint from the Annual Report of the Pennsylvania State College for 1894, giving the object, history, and development of the station.

Bulletin 32, pp. 11.—Small Fruits in 1894.—Descriptive notes and tabulated data on a number of varieties of small fruits.

Bulletin 33, pp. 11, figs. 3.—Directions for Using the Babcock Milk Test.—Popular directions for carrying out the test, with an offer to supply tested apparatus at a fair price.

Bulletin 34, pp. 12, figs. 2.—A Phosphate Deposit in Juniata County.—A preliminary report of investigations of the geology and chemical composition of a phosphate deposit in this locality.

Annual Report for 1894, pp. 376, diagrams 9, map 1, figs. 5.—Embraces the director's report on the organization and work of the year; the results of tests of cream separators and separators in creameries, with investigations as to the steam consumption of the various separators; notes on rational stock feeding, with the results of feeding experiments with dairy cows; fertilizer and curing experiments with tobacco; investigations of the soil of Lancaster County limestone belt in its relation to tobacco culture; general fertilizer experiments; variety tests of field crops; notes on the habitat and nature of the varying hare, or white rabbit; results of meteorological observations; a reprint of Bulletin 29 of the station; and a financial statement for the fiscal year ending June 30, 1894.

The Pennsylvania Station continues to concentrate its work on a few lines of investigation, giving most attention to problems relating to feeding of animals, feeding stuffs, and fertilizers. It is doing thorough and important work in practical and scientific lines related to the agriculture of the State. Its business is very systematically conducted and its affairs are in a prosperous condition.

RHODE ISLAND.

Rhode Island Agricultural Experiment Station, Kingston.

DEPARTMENT OF RHODE ISLAND COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

The work of the Rhode Island Station during the past year has included fertilizer analysis and inspection; chemical and agricultural investigations on the use of fertilizers, with special reference to the effect of lime and the substitution of soda for potash; variety, fertilizer, culture, and rotation experiments with grain and forage plants; horticultural investigations and studies of plant diseases; and poultry experiments, especially with geese. A biologist has been added to the station staff and is engaged in investigations relating to oyster culture, a matter of much importance to the State. The poultry division of the station has been abolished and work in this line has been put in charge of the agriculturist. Cooperative experiments with regard to the use of lime to correct acidity of the soil are being conducted in a number of localities. About 20 acres of the college farm has been definitely assigned to the station, and such other portions of the farm as it needs for experimental purposes will be temporarily assigned to it from time to time. The station is entirely relieved from work and expenditures attending the general management of the farm.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 2,676.84 |
| Farm products..... | 1,296.04 |
| Miscellaneous..... | 1,094.80 |
| Total | 20,067.68 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were *Bulletins* 32-36 and the Annual Report for 1894.

Bulletin 32, pp. 9.—*Analyses of Commercial Fertilizers.*—Tabulated analyses and valuations of 68 samples of fertilizing materials, with notes on the cost of mixing fertilizers, and on the comparative commercial and agricultural value of muriate and sulphate of potash.

Bulletin 33, pp. 46, figs. 6.—*Fertilizers; Potatoes; Potato Scab.*—Tabulated analyses of a number of samples of commercial fertilizers, with the results of investigations on the effect of liming upon the development of potato tubers, and upon the effect of barnyard manure and various compounds of sodium, calcium, and nitrogen upon the development of the potato scab.

Bulletin 34, pp. 46.—*Analyses of Fertilizers; Home-mixed Fertilizers.*—Analyses and valuations of 10 samples of fertilizers, with explanatory notes and a tabular statement showing the number of complete fertilizers analyzed in five years (1891-1895), and the agreement of the analyses with the guaranties.

Bulletin 35, pp. 37, figs. 6.—*Garden Seeds.*—Results of investigations of the quality of garden seeds offered for sale in Rhode Island in the spring of 1895, with notes on methods of testing and comments on the results.

Bulletin 36, pp. 25, figs. 13.—*Potato Culture; Hastening Maturity.*—The results of tests of northern and home-grown seed potatoes, with cultural notes and the results of experiments on raising early potatoes.

Annual Report for 1894, pp. 134, figs. 54.—Reports of the director and heads of departments on the work of the year, including the results of field experiments with fertilizers and farm crops; miscellaneous chemical analyses; investigations for the purpose of determining whether the results secured in soil tests with a given plant are applicable to plants in general; investigations upon the growth of various plants upon an upland acid soil before and after liming; investigations on the substitution of soda for and its value in connection with potash; illustrated and descriptive notes on fungi; a study of the diseases of turkeys, with general notes on poultry shows, statistics, etc.; meteorological summary for 1894, and a financial statement for the fiscal year ending June 30, 1894.

The Rhode Island Station has made considerable progress during the past year in developing and strengthening its work. The station has already benefited by the change in the management of the farm, which makes it responsible for only so much land as is actually required for experimental purposes. Some of the more superficial features of its work have been abolished, and investigations are being concentrated in a few lines of much importance to the agriculture and horticulture of the State.

SOUTH CAROLINA.

South Carolina Agricultural Experiment Station, Clemson College.

DEPARTMENT OF CLEMSON AGRICULTURAL COLLEGE.

The work of the South Carolina Station during the past year has included the analysis and inspection of commercial fertilizers; chemical analyses of soils, waters, and plants; variety, fertilizer, and rotation experiments, especially with corn and cotton; horticultural experiments; practical work in dairying; studies in veterinary science and practice. The analysis and inspection of fertilizers is carried on under State laws and with funds provided by the State.

The income of the station was as follows:

United States appropriation..... \$15,000

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 20-24 and the Annual Report for 1895.

Bulletin 20, pp. 21.—*Analyses of Commercial Fertilizers.*—Tabulated analyses of 206 samples of fertilizers, with the calculated commercial values and the manufacturers' guaranties.

Bulletin 21, pp. 17.—*The Determination of the Oxids of Iron and Aluminum in Presence of Phosphoric Acid, Lime, and Magnesia.*—A technical bulletin, giving the results of investigations with various analytical methods.

Bulletin 22, pp. 8.—*Colic in Horses and Mules.*—A popular bulletin,

with suggestions for the recognition, treatment, and prevention of this disease.

Bulletin 23, pp. 9.—*Lameness in Horses and Mules.*—A popular discussion, giving methods for diagnosis and treatment, with brief notes on depraved appetites in horses and mules.

Bulletin 24, pp. 13.—*Analyses of Commercial Fertilizers.*—Tabulated analyses of 117 samples of fertilizers with the manufacturers' guaranties.

Annual Report for 1895, pp. 25.—Reports by director and heads of departments on the work of the year, including the chemical analyses of feeding stuffs, minerals, waters, etc., and a financial statement for the fiscal year ending June 30, 1895.

The work of the South Carolina Station has not progressed satisfactorily during the past year. There is still need of more thorough planning and more active prosecution of station enterprises. The station is now undergoing a partial reorganization with a view to strengthening its work, and it is hoped that it will be able to make a much better showing hereafter.

SOUTH DAKOTA.

South Dakota Agricultural Experiment Station, Brookings.

DEPARTMENT OF SOUTH DAKOTA AGRICULTURAL COLLEGE.

The work of the South Dakota Station during the past year has included field experiments with grain and forage crops; experiments in horticulture and forestry; work in dairying; chemical, botanical, and entomological investigations; studies in veterinary science and practice.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| State | 1,120.00 |
| Miscellaneous | 684.13 |
| Total | 16,804.13 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were *Bulletins 42-45.*

Bulletin 42, pp. 14, figs. 2.—*Squashes.*—Brief cultural notes, with results of experiments in growing squashes at the station.

Bulletin 43, pp. 29.—*Native Trees and Shrubs.*—A report of 117 species of woody plants, with notes on the distribution of the different species throughout the State and the arboreal and arborescent flora of 5 of the most conspicuous regions of the State.

Bulletin 44, pp. 25, diagram 1.—*Forestry.*—Brief remarks on the hardiness and adaptability of trees in general, with conclusions derived from the study of various forest trees planted in 10 plats in different combinations of species.

Bulletin 45, pp. 16, figs. 3.—*Forage Plants.*—Cultural and descriptive notes on several species of forage plants.

The affairs of the South Dakota Station have been in a disturbed condition during the past year. By a court decision the management of the station as it existed at the beginning of the year was overturned and several changes in the personnel of the station staff were made. A few months later the membership of one of the governing boards was changed again sufficiently to admit of the reinstatement of the former director, and another reorganization of the station staff occurred.

At a recent election a proposed amendment to the State constitution, abolishing the board of trustees, and thus putting the management of the college and station wholly in the hands of the board of regents was carried. It is believed that this will ultimately insure the establishment of a more permanent policy of station management and do away with the friction necessarily arising from the action of the board of trustees as a secondary board of management. The work of the station, of course, suffers greatly from the rapid changes in its management. Until the State of South Dakota can give sufficient guaranty that the affairs of the station will be divorced from politics and a permanent policy of station work will be maintained, the continuance of the payment of national funds to that State for experiment station purposes should, in my judgment, not be recommended by this Department.

TENNESSEE.

Tennessee Agricultural Experiment Station, Knoxville.

DEPARTMENT OF THE UNIVERSITY OF TENNESSEE.

The work of the Tennessee Station during the past year has included variety, fertilizer, and culture experiments with grain and forage crops; feeding experiments with milch cows; chemical analyses, especially of Southern cattle foods; horticultural investigations; studies of plant diseases and remedies, and entomological investigations. The station continued to make analyses of commercial fertilizers for the State bureau of agriculture, the expenses of this work being provided for from State funds. In cooperation with this Department the station has established a grass garden covering about 10 acres.

The income of the station was as follows:

| | |
|------------------------------------|-------------|
| United States appropriation | \$15,000.00 |
| Fees for fertilizer analyses | 415.00 |
| Farm products | 1,440.12 |
| Total | 16,855.12 |

The publications of the station received during the fiscal year were *Bulletins*, vol. 8, Nos. 1-4, and the *Annual Report* for 1895.

Bulletin 1, pp. 21, figs. 15—*Spraying Apparatus; Insecticides; Fungicides; Spraying Calendar*.—Descriptions of various forms of spraying apparatus, with notes on the preparation and use of insecticides and fungicides, and a spraying calendar.

Bulletin 2, pp. 7, figs. 7.—*The Wild Onion*.—Botanical description, with notes on characteristics and methods of combating.

Bulletin 3, pp. 6.—*Some Experiments with Fungicides on Peach Foliage*.—Results of spraying experiments.

Bulletin 4, pp. 15, figs. 7.—*The Chinch Bug*.—Illustrated, descriptive, life history, and remedial notes on the chinch bug, with an account of its appearance and ravages in the State.

Annual Report for 1895, pp. 16.—Brief reports by the director and heads of departments on the work of the year and a financial statement for the fiscal year ending June 30, 1895.

The work and management of the Tennessee Station have continued along the same lines as heretofore. The operations of the station are concentrated on a few lines in which scientific and practical work can be combined to great advantage and the limited resources of the station are economically administered.

TEXAS.

Texas Agricultural Experiment Station, College Station.

DEPARTMENT OF THE STATE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS.

The work of the Texas Station during the past year has included field experiments with cotton, grain, and forage crops, and canaigre; feeding experiments with beef cattle and hogs; chemical analyses, especially of canaigre; horticultural investigations; and studies in veterinary science and practice. Substations have been maintained in two places, mainly with a State appropriation of \$2,500.

The income of the station was as follows:

| | |
|--|-----------|
| United States appropriation..... | \$15, 000 |
| State appropriation for substations..... | 2, 500 |
| Total | 17, 500 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were *Bulletins 35-37* and the *Annual Reports* for 1894 and 1895.

Bulletin 35, pp. 11.—*Miscellaneous analyses.*—Chemical analyses of a number of samples of waters, clays, marls, soils, etc.

Bulletin 36, pp. 43, figs. 20.—*Vegetables; Insecticides.*—Cultural and descriptive notes and variety tests of a number of vegetables, with brief notes on insects, fungi, and insecticides.

Bulletin 37, pp. 82.—*Sundry Brief Articles; Index.*—Compiled press notes published during the years 1894 and 1895.

Annual Report for 1894, pp. 14.—Brief reports by the director and heads of departments, and a financial statement for the fiscal year ending June 30, 1894.

Annual Report for 1895, pp. 42.—Brief reports by the director and heads of departments on the work of the year, with a synopsis of all reports and bulletins published up to January 1, 1896, and a financial statement for the fiscal year ending June 30, 1895.

The Texas Station, as well as the college with which it is connected, continues to be greatly hampered by lack of funds to maintain its operations on the scale on which they were planned. As a result, work in a number of lines has been allowed to drift or has been practically abandoned. The station is running behind in both its work and its publications. The relations of station and college are not defined with sufficient strictness. Under present conditions the funds bestowed upon this station by the United States are not being expended in the most economical and efficient manner. Measures are, however, being taken to readjust the affairs of the station on a more satisfactory basis.

UTAH.

Agricultural Experiment Station, Logan.

DEPARTMENT OF THE AGRICULTURAL COLLEGE OF UTAH.

The work of the Utah Station during the past year has included variety, rotation, and irrigation experiments with cereals and other crops; feeding and pasturage experiments with dairy cows and calves;

work in dairying; horticultural and forestry experiments; investigations in irrigation engineering; soil analyses and digestion and analytical study of alfalfa; and studies in veterinary science.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 2,314.05 |
| Total..... | 17,314.05 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 39-42.

Bulletin 39, pp. 76, figs. 13.—Farm Irrigation; Orchard Irrigation.—Results of extensive investigations in farm irrigation, with brief general notes on orchard irrigation.

Bulletin 40, pp. 40, figs. 4.—The Economic Production of Pork.—Detailed results of two years' feeding experiments with pigs to determine the value of grass and its relation to exercise in the production of pork, and a summary of the work of four years along these same lines.

Bulletin 41, pp. 27, figs. 8.—Tuberculosis.—A popular and general discussion of the subject of tuberculosis, both of animals and of man, with tabulated data showing the temperature records of various animals of the station herd, and illustrated notes on post-mortem examinations.

Bulletin 42, pp. 15.—Creaming Experiments.—Results of investigations on different methods of creaming.

In the spring of 1896 the director (who was also president of the college), agriculturist, and horticulturist of the Utah Station were notified that their services would not be required after September 1 of that year. In the reorganization necessitated by the creation of these vacancies in the station staff the new president was relieved of the management of the station, and a director and a farm superintendent were appointed. The position of horticulturist has only recently been filled. As indicated by our examination of the affairs of this station near the close of the last fiscal year, several of the station officers had too much college work to allow them to give an amount of time and energy to station duties proportionate to the salaries paid them from station funds. The station accomplished considerable useful work during the past year, but it is obvious that the unsettled condition of its affairs greatly hampered its operations.

VERMONT.

Vermont Agricultural Experiment Station, Burlington.

DEPARTMENT OF UNIVERSITY OF VERMONT AND STATE AGRICULTURAL COLLEGE.

The work of the Vermont Station during the past year has included analysis and inspection of commercial fertilizers; feeding experiments, especially with dairy cows; dairy experiments; variety tests of forage crops; investigations on plant diseases and weeds; horticultural investigations; and studies in entomology. The university with which the station is connected has recently erected a large and splendidly equipped science building. This will immediately benefit the station by affording it greatly increased facilities for investigations in the physiology and pathology of plants, and in the near future may still further increase its opportunities for scientific work. The horticultural work of the station is also being developed and additional greenhouse

facilities have been provided. Cooperative experiments in the spraying and cultivation of orchards are being conducted in several localities.

The income of the station was as follows:

| | |
|-----------------------------------|-------------|
| United States appropriation | \$15,000.00 |
| State | 1,531.37 |
| Farm products | 3,389.07 |
| Total | 19,920.44 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 48-52 and the Annual Report for 1894.

Bulletin 48, pp. 16, fig. 1.—Gluten Feeds and Meals.—Results of feeding tests with gluten products and notes and tabulated data on their source and composition.

Bulletin 49, pp. 20, figs. 5.—Potato Blights and Fungicides.—Results of spraying experiments, with illustrated descriptive notes on various forms of potato blight, and brief remarks on potato seed selection as a preventive of late blight and on frost injuries to apples and pears.

Bulletins 50, pp. 8; 51, pp. 9; 52, pp. 21.—Analyses of Commercial Fertilizers.—Tabulated analyses and valuation of 232 samples of fertilizers, with notes on valuation, statements regarding collection of samples, a comparison of values of fertilizers licensed in 1895 and 1896, and trade values of fertilizing materials in Vermont during the same time.

Annual Report for 1894, pp. 199, figs. 18.—Reports by the director and heads of the departments on the work of the year, including the results of chemical analyses of forage crops, silage, muck, water, etc.; feeding experiments with pigs and dairy cows; spraying experiments with fungicides on potatoes, apples, and pears; illustrated and descriptive notes on a number of insect pests; results of experiments in bee keeping; results of investigations with mallein as a diagnostic for glanders in horses; tests of dairy apparatus; notes upon the effect of fatigue on the quantity and quality of milk; results of extended investigations in the preservation of fodder corn; a reprint of Bulletin 42; abstracts from Bulletin 41 and of a thesis on studies upon carnation rust; and a financial statement for the fiscal year ending June 30, 1894.

The Vermont Station has actively prosecuted its work during the past year and is developing its operations mainly in lines of great usefulness to the State. The station is being helped by the prosperity of the university. The management of the farm may, however, be justly criticised on the ground that too much work, especially in the maintenance of a relatively large dairy herd, is being attempted. With the present resources of the station this necessarily lowers the grade of the station operations in this line and in some respects practically eliminates truly experimental features.

VIRGINIA.

Virginia Agricultural and Mechanical College Experiment Station,
Blacksburg.

DEPARTMENT OF VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE.

The work of the Virginia Station during the past year has included field experiments with grain and forage crops; horticultural investigations; studies of plant diseases and remedies; botanical and entomolog-

ical studies; chemical studies, especially of potatoes and tobacco; and investigations in veterinary science and practice. Under a recent State law the station veterinarian acts as State veterinarian, with large powers for the repression of animal diseases.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 3,455.76 |
| Miscellaneous..... | 114.63 |
| Total | 18,570.39 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 42-49 and the Annual Reports for 1893-94 and 1894-95.

Bulletin 42, pp. 4.—Tests of Fertilizers on Wheat.—Tabulated results of investigations extending over a period of three years.

Bulletin 43, pp. 9.—Veterinary Materia Medica for Farmers.—Popular information on the subject, giving in a general way the action and uses of the more common drugs.

*Bulletin 44, pp. 5.—Crimson Clover (*Trifolium incarnatum*).*—Brief cultural notes, with the chemical analyses of crimson clover hay.

Bulletin 45, pp. 3.—Veterinary Materia Medica for Farmers (2d part).—Popular information on the action and uses of some of the more common drugs.

Bulletin 46, pp. 8, pls. 2.—Principles of Horseshoeing.—Popular and illustrated notes on the principles of horseshoeing.

Bulletin 47, pp. 4.—Tests of Fertilizers on Wheat.—Brief notes, with tabulated results of investigations.

Bulletin 48, pp. 15, figs. 3.—Evaporating Apples.—Statistics on the apple industry in Virginia, with popular information on plans and methods for evaporating the fruit.

Bulletin 49, pp. 13.—Pear Culture.—Cultural notes on the pear, with the results of spraying experiments and variety tests, and descriptive notes on the varieties grown.

Annual Report for 1893-94, pp. 8.—Brief reports by the director and heads of departments on the work of the year, and a financial statement for the fiscal year ending June 30, 1894.

Annual Report for 1894-95, pp. 9.—Brief reports by the director and heads of departments on the work of the year, with a financial statement for the fiscal year ending June 30, 1895.

The Virginia Station is working in lines of practical usefulness to the State. It has been making special efforts of late to reach the farmers of the State by issuing popular bulletins at frequent intervals. The station is carrying the burden of a large farm, which, with its present limited income and need of better facilities, necessarily retards its progress in experimental investigations.

WASHINGTON.

Washington Agricultural Experiment Station, Pullman.

DEPARTMENT OF WASHINGTON AGRICULTURAL COLLEGE AND SCHOOL OF SCIENCE.

The work of the Washington Station during the past year has included soil investigations; field experiments with sugar beets, flax, grain, and

forage crops; feeding experiments; horticultural and entomological investigations, and work in dairying. The substation at Puyallup has organized its work with special reference to the needs of agriculture in the western part of the State. It is much to be desired that the State shall provide for the maintenance of this substation if its work is to be continued on a permanent and substantial basis.

The income of the station was as follows:

| | |
|---------------------------------------|-------------|
| United States appropriation | \$15,000.00 |
| State appropriation | 8,000.00 |
| Farm products and miscellaneous | 1,733.00 |
| Individuals | 2,500.00 |
| Total | 27,233.00 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of the station received during the fiscal year were Bulletins 13-20 and the Annual Report for 1895.

Bulletin 13, pp. 37.—Washington Soils.—A report of progress in “an exhaustive soil survey of the State,” including a general discussion on the origin and composition of soils, explanation of terms used, and interpretations of results obtained in soil analyses; and notes and tabulated data for chemical analyses of 20 samples of soil sent to the station for examination.

Bulletin 14, pp. 15, figs. 4.—Silos and Ensilage.—A popular bulletin on the subject, mainly compiled, treating of the crops suitable for silage, their growth and storage, and the construction of silos.

Bulletin 15, pp. 60.—Sugar Beets in Washington.—Results of cooperative tests of 7 varieties of beets by 384 farmers, with tabulated analyses of 1,700 samples of sugar beets, coming from 27 counties. The advantages of the beet-sugar industry for Washington are discussed, and statistical data are given from the report of the sugar bounty division of the Commissioner of Internal Revenue.

Bulletin 16, pp. 10.—Feeding Wheat to Hogs.—Results of investigations in feeding wheat five different ways.

Bulletin 17, pp. 62, figs. 64.—Insect Pests of the Garden, Farm, and Orchard.—Popular illustrated, remedial, and descriptive notes on the more common injurious insects of the State, and brief descriptions and notes on machines for applying insecticides, largely compiled.

Bulletin 18, pp. 25, figs. 5.—The Babcock Milk Test.—Popular notes on the nature and use of the Babcock milk test, with illustrated and descriptive notes on the apparatus employed.

Bulletin 19, pp. 18.—Vegetables.—Cultural notes and lists of varieties of vegetables grown in 1895.

Bulletin 20, pp. 9.—Fiber Flax in Washington.—Popular bulletin on flax culture.

Annual Report for 1894, pp. 29.—Reports by director and heads of departments on the work of the year, including a number of variety tests of farm crops, and a financial statement for the fiscal year ending June 30, 1895.

The Washington Station has actively and steadily prosecuted its work during the past year. It has made special efforts to bring its publications up to date and to keep the farmers of the State informed regarding the progress of its operations. It is working along lines of practical usefulness, and the outlook for the development and strengthening of its investigations through the maintenance of a consistent policy of management is very promising.

WEST VIRGINIA.

West Virginia Agricultural Experiment Station, Morgantown.

DEPARTMENT OF WEST VIRGINIA UNIVERSITY.

The work of the West Virginia Station during the past year has included fertilizer analysis and inspection; chemical studies, especially of potatoes; horticultural investigations; studies of plant diseases, and entomological investigations, especially on forest insects. With the aid of a State appropriation a farm of 81 acres has been purchased for the station and will be used for fertilizer and variety tests, pasturage and feeding experiments with dairy cattle, sheep, and pigs, and experiments with poultry. The horticultural work is being developed in the direction of greenhouse or laboratory investigations, which involve studies in plant physiology and pathology.

The university with which the station is connected has been more thoroughly organized, and a clearly defined college of agriculture has been formed. In this way the station has been brought into more intimate relations with the university. The director of the station acts as dean of the college of agriculture, and the officers of the station devote a portion of their time to teaching. By a change in a State law the number of members of the board of control has been reduced from 13 to 9. Five new members came into the board in June, 1895.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Fertilizer fees..... | 5,709.03 |
| Farm products..... | 259.17 |
| Miscellaneous..... | 1,386.99 |
| Total..... | 22,355.19 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 40-43 and a special poster bulletin.

Bulletin 40, pp. 27.—Commercial Fertilizers.—Describes the different forms of phosphoric acid, explains briefly the value and management of farm manures, makes suggestions regarding the selection and valuation of fertilizers, gives the text of the State fertilizer law, and reports analyses of 317 fertilizing materials collected in 1894 and 1895.

Bulletin 41, pp. 18, fig. 1.—Potatoes.—Tests of varieties, with brief cultural notes and meteorological data during the growing season and the results of experiments for the treatment of potato scab.

Bulletin 42, pp. 16, figs. 3.—Vegetables.—Cultural notes and tabulated data for variety tests with a number of varieties of vegetables.

Bulletin 43, pp. 13, figs. 6.—Why, When, What, and How to Spray.—Popular bulletin on spraying.

Special Bulletin, folio and supplement.—A poster bulletin, giving analyses and valuations of 139 samples of fertilizing materials.

The West Virginia Station is doing useful work and concentrating its efforts in comparatively few lines. It is developing the scientific as well as the practical side of its operations. The scope of its work will be materially enlarged by the addition of field and feeding experiments. The university with which the station is connected is prospering, and its reorganization on a progressive basis will without doubt be to the advantage of the station.

WISCONSIN.

Agricultural Experiment Station of the University of Wisconsin, Madison.

DEPARTMENT OF THE UNIVERSITY OF WISCONSIN.

The work of the Wisconsin Station during the past year has included investigations in agricultural physics, especially studies of soils, drainage, and irrigation; chemical, bacteriological, and practical investigations in dairying; feeding experiments with pigs, lambs, and dairy cattle; horticultural investigations, and chemical analyses of feeding stuffs and fertilizers. Under a State law, passed in 1895, the station has undertaken the analysis and inspection of commercial fertilizers, the sale of which is increasing in the State. Increased facilities for the work of the station, especially in agricultural physics, were provided by a large addition to the laboratories of this department, built with a State appropriation of \$20,000.

The income of the station was as follows:

| | |
|--------------------------------------|----------|
| United States appropriation..... | \$15,000 |
| State appropriation | 5,000 |
| Farm and creamery products, etc..... | 10,000 |
| Total | 30,000 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were
 • Bulletins 43-48 and the Annual Report for 1895.

Bulletin 43, pp. 48, figs. 12.—The Agricultural, Horticultural, and Live Stock Features of a Portion of Wisconsin Tributary to Superior.—A report of investigations in northwest Wisconsin, embracing a general account of the status of the culture of vegetables, small fruits, and ornamentals; the results of soil studies and notes on the local dairy and sheep feeding industry, with methods of improvement.

Bulletin 44, pp. 46, figs. 12.—Pasteurization of Milk and Cream for Direct Consumption.—A full discussion of the subject of pasteurization of milk and cream, the conditions to be observed in pasteurization on a large and small scale, bottling, cost of the operation, etc., and on the difference between pasteurizing and sterilizing and the relative advantages of each.

Bulletin 45, pp. 21.—Apple Culture in Wisconsin.—Compilation of notes and data obtained from 172 apple growers in the State in response to a circular letter of inquiry.

Bulletin 46, pp. 38, figs. 21.—Power Tests of Centrifugal Cream Separators.—Detailed results of tests made to determine the power required for running the different kinds of centrifugal separators in use at the Wisconsin Dairy School.

Bulletin 47, pp. 6.—Wisconsin Fertilizer Law.—Text of the State fertilizer law, with brief notes on the value and importance of commercial fertilizers and the need and advantages of State supervision and control of the industry.

Bulletin 48, pp. 22, chart 1.—The Conn Culture (B 41) in Butter Making.—Results of extended investigations with B 41 in butter making.

Annual Report for 1895, pp. 349, figs. 37.—Results of feeding experiments with pigs and lambs; a description of a dipping vat for sheep; investigations on the manufacture, analysis, digestibility, adulteration,

etc., of oil meals; miscellaneous fodder analyses; investigations on the centrifugal separation of casein and insoluble phosphates from milk, on the relation between specific gravity and milk solids, and on the relation between milk solids and the yield of cheese; experiments in cheese making; investigations on the gas-producing bacteria and the relation of the same to cheese; notes on the pasteurization of milk and cream; investigations on the effect of pasteurization and sterilization on the viscosity and fat globules of milk and cream; investigations on the gaseous fermentations in the canning industry; experiments in draining low-lying marsh lands by means of a dike, a sump, or reservoir, tile drains and a windmill; irrigation experiments on field crops and on fruits and vegetables; investigations on the influence of North and South slopes on the temperature of the trunks of fruit trees; experiments in strawberry culture; miscellaneous horticultural work; investigations on the necessary loss of dry matter in corn silage and on the conditions affecting the starch content of potatoes; experiments in the culture and curing of tobacco; tests of insecticides; experiments in the prevention of night frosts; a revised and enlarged edition of Bulletin 48 and a short abstract of Bulletin 46; a brief report on the work of the year by the director, and a financial statement for the fiscal year ending June 30, 1895.

The Wisconsin Station continues to do a large amount of scientific and practical work. Its policy is to concentrate its main efforts on comparatively few problems and work these out thoroughly. At the same time, with increasing resources, it has added new lines of investigation, as, for example, studies in irrigation and the analysis of commercial fertilizers. It also keeps in close touch with the practical farmers, dairymen, and horticulturists of the State, and makes special effort to prepare publications which will be of interest to them.

WYOMING.

Wyoming Agricultural Experiment Station, Laramie.

DEPARTMENT OF THE UNIVERSITY OF WYOMING.

The work of the Wyoming Station during the past year has included field experiments with grain, forage, and root crops grown with and without irrigation; chemical and other studies of alkali soils; analyses of cereal foods; feeding experiments; irrigation investigations; botanical studies, especially of weeds and fungi; and meteorological observations.

The income of the station was as follows:

| | |
|----------------------------------|-------------|
| United States appropriation..... | \$15,000.00 |
| Farm products..... | 266.95 |
| Total | 15,266.95 |

A report of the receipts and expenditures for the United States fund has been rendered in accordance with the schedules prescribed by this Department and has been approved.

The publications of this station received during the fiscal year were Bulletins 24-27 and the Annual Report for 1895.

Bulletin 24, pp. 43.—Water Analyses.—A general discussion on water and water supply and notes on the methods of analysis and on the interpretation of the results of chemical examinations of waters, with

chemical analyses of a number of samples of irrigation, well, and spring waters.

Bulletin 25, pp. 8.—Cost and Profit of Growing Wheat.—Popular notes embracing the results of three years' investigations.

Bulletin 26, pp. 9.—Garden Peas.—Results of variety tests, with brief descriptive notes on a few of the choicer varieties.

Bulletin 27, pp. 44, figs. 9.—Meteorology for 1895 and Notes on Climate from 1891–1896.—General remarks on the weather, with illustrated descriptions of meteorological apparatus, and the tabulated results of meteorological observations for 1895, and comparative notes on the climate of Wyoming for the years 1891–1896.

Annual Report for 1895, pp. 202.—Brief reports by the director and heads of departments on the work of the year, with a reprint of the press and station bulletins issued during the year, and a financial report for the fiscal year ending June 30, 1895.

Near the close of the last fiscal year vacancies were created in the positions of director and physicist, and these have since been filled by the appointment of new men. One of the substations has been discontinued and others will be given up as soon as practicable. By concentrating its work more fully on investigations of general importance to the agriculture of the State and substituting cooperative experiments in variety testing and other simple investigations for the expensive substations, it is hoped that the work of the station will be materially strengthened. This, however, can be accomplished only by the pursuance of a wise and permanent policy of station management, wholly divorced from the fluctuations of party politics.

TABLE NO. 1.—General statistics of the agricultural experiment stations in the United States.

| Station. | Location. | Director. | Date of organization. | Date of organization under Hatch Act. | Number of teachers on staff. | Land used by station. | Principal lines of work. |
|---------------------------|--------------------|---------------------|-----------------------|---------------------------------------|------------------------------|-----------------------|---|
| Alabama (College)..... | Auburn | W. L. Broun..... | Feb. —, 1883 | Feb. 24, 1888 | 11 | Acres. | Botany; fertilizer analysis; field experiments; horticulture; diseases of plants; pig feeding. |
| Alabama (Canebrake)..... | Uniontown | H. Benton | Jan. 1, 1886 | Apr. 1, 1888 | 3 | 40 | Field experiments; diseases of animals. |
| Arizona | Tucson | W. S. Devol ..... | ..... | 1889 | 9 | 53 | Field experiments; entomology; forestry; irrigation. |
| Arkansas..... | Fayetteville | R. L. Bennett ..... | ..... | 1887 | 7 | 4 | Analyses of foods and feeding stuffs; field experiments; horticulture; diseases of plants; diseases of animals. |
| California..... | Berkeley | E. W. Hilgard | 1875 | 1888 | 25 | 9 | Botany; meteorology; physics; chemistry and geographical distribution of soils; field crops; horticulture; technology of wine and olive oil; entomology; chemistry of foods and feeding stuffs; drainage and irrigation; reclamation of alkali lands. |
| Colorado..... | Fort Collins | Alston Ellis | 1879 | Feb. —, 1888 | 16 | 6 | Chemistry; botany; meteorology; field experiments; horticulture; entomology; irrigation. |
| Connecticut (State)..... | New Haven..... | S. W. Johnson | Oct. 1, 1875 | May 18, 1887 | 14 | 7 | Chemistry; analysis and inspection of fertilizers and foods; field and pot experiments; chemistry of feeding stuffs and dairy products; diseases of plants; seed tests; horticulture. |
| Connecticut (Storrs)..... | Storrs | W. O. Atwater ..... | ..... | do | 6 | 1 | Food and nutrition of men and animals; bacteriology of dairy products; dairying; field experiments. |
| Delaware | Newark | A. T. Neale ..... | ..... | Feb. 21, 1888 | 5 | 1 | Chemistry; field experiments; horticulture; diseases of plants; entomology; feeding experiments; diseases of animals; dairying. |
| Florida | Lake City..... | O. Clute..... | ..... | 1888 | 8 | 4 | Chemistry; field experiments; horticulture; entomology. |
| Georgia..... | Experiment | R. J. Redding | Feb. 18, 1888 | July 1, 1889 | 5 | 1 | Field experiments; horticulture; dairying. |
| Idaho..... | Moscow | F. B. Gault ..... | ..... | Feb. 26, 1892 | 8 | 7 | Chemistry; botany; field experiments; physics; entomology. |
| Illinois..... | Urbana | E. Davenport..... | ..... | Mar. 21, 1888 | 11 | 9 | Chemistry; bacteriology; field experiments; horticulture; forestry; diseases of plants; entomology; feeding experiments; dairying. |
| Indiana..... | Lafayette..... | C. S. Plumb | 1885 | Jan. —, 1888 | 9 | 5 | Chemistry; pot and field experiments; horticulture; feeding experiments; diseases of animals. |

TABLE NO. 1.—General statistics of the agricultural experiment stations in the United States—Continued.

| Station. | Location. | Director. | Date of original organization. | Date of organization under Hatch Act. | Number in staff. | Number of teachers on staff. | Land used by station. | Principal lines of work. |
|-------------------------|---------------------------|----------------------|--------------------------------|---------------------------------------|------------------|------------------------------|-----------------------|---|
| Iowa | Ames..... | James Wilson..... | ..... | Feb. 17, 1888 | 12 | ..... | <i>Acres.</i> | Chemistry; field experiments; horticulture; diseases of plants; entomology; feeding experiments; dairying. |
| Kansas | Manhattan | G. T. Fairchild..... | ..... | Feb. 8, 1888 | 14 | 8 | 100 | Field experiments; horticulture; diseases of plants; entomology; feeding experiments; diseases of animals; irrigation. |
| Kentucky | Lexington | M. A. Seovell..... | Sept. —, 1885 | Apr. —, 1888 | 8 | 2 | 45 | Chemistry; soils; fertilizer analysis; field experiments; horticulture; diseases of plants; entomology; dairying. |
| Louisiana (Sugar) | New Orleans..... | W. C. Stubbs | Sept. —, 1885 | ..... | 8 | ..... | 45 | Chemistry; bacteriology; soils; field experiments; horticulture; sugar making; drainage; irrigation. |
| Louisiana (State) | Baton Rouge..... | do | Apr. —, 1886 | ..... | 9 | 8 | 109 | Chemistry; botany; bacteriology; geology; soils; field experiments; horticulture; entomology; feeding experiments. |
| Louisiana (North) | Calhoun | do | May —, 1887 | ..... | 6 | ..... | 200 | Chemistry; soils; fertilizers; field experiments; horticulture; dairying; stockraising. |
| Maine | Orono..... | C. D. Woods..... | Mar. —, 1885 | Oct. 1, 1887 | 11 | 4 | 35 | Chemistry; field experiments; horticulture; diseases of plants; food and nutrition of men and animals; diseases of animals; dairying. |
| Maryland..... | College Park..... | R. H. Miller..... | 1888 | Apr. 1, 1888 | 10 | 2 | 60 | Chemistry; soils; field experiments; horticulture; entomology; feeding experiments. |
| Massachusetts..... | Amherst..... | H. H. Goodell..... | * 1882 | Mar. 2, 1888 | 18 | 8 | 32 | Chemistry; meteorology; analysis and control of fertilizers; field experiments; horticulture; diseases of plants; entomology; digestion and feeding experiments; diseases of animals. |
| Michigan | Agricultural College..... | C. D. Smith ..... | ..... | Feb. 26, 1888 | 17 | 7 | 60 | Botany and bacteriology; field experiments; horticulture; forestry; diseases of plants; entomology; feeding experiments; diseases of animals; dairying. |
| Minnesota..... | St. Anthony Park | W. M. Liggett | Mar. 7, 1885 | 1888 | 12 | 9 | 1, 153 | Chemistry; field experiments; horticulture; plant diseases; feeding and breeding experiments; animal diseases; entomology; dairying. |
| Mississippi | Agricultural College..... | S. M. Tracy ..... | ..... | Jan. 27, 1888 | 12 | 4 | 120 | Botany; soils; field experiments; horticulture; entomology; feeding experiments; diseases of animals; drainage and irrigation. |

| | | | | | | | |
|---------------------------|--------------------|---------------------|---------------|----|-------|-------|---|
| Missouri..... | Columbia..... | H. J. Waters..... | Jan. —, 1888 | 11 | 7 | 80 | Chemistry; field experiments; horticulture; diseases of plants; entomology; feeding experiments; drainage. |
| Montana..... | Bozeman..... | S. M. Emery..... | July 1, 1893 | 5 | 4 | 100 | Field experiments; diseases of plants; feeding experiments; diseases of animals; irrigation. |
| Nebraska..... | Lincoln..... | G. E. MacLean..... | Dec. 16, 1884 | 19 | 7 | 110 | Chemistry; botany; meteorology; field experiments; horticulture; forestry; feeding and breeding experiments; diseases of animals. |
| Nevada..... | Reno..... | J. E. Stubbs..... | May 1, 1888 | 7 | 4 | 61 | Chemistry; botany; soils; field experiments; horticulture; entomology; irrigation. |
| New Hampshire..... | Durham..... | C. S. Murkland..... | 1886 | 10 | 8 | 36½ | Chemistry; field experiments; feeding experiments; diseases of animals; dairying. |
| New Jersey (State)..... | New Brunswick..... | E. B. Voorhees..... | Mar. 10, 1880 | 10 | ----- | ----- | Chemistry; analysis and control of fertilizers; field experiments; horticulture; dairy husbandry. |
| New Jersey (College)..... | do..... | do..... | Apr. 26, 1888 | 8 | 4 | 57 | Botany; diseases of plants; entomology; diseases of animals. |
| New Mexico..... | Mesilla Park..... | C. T. Jordan..... | Dec. 14, 1889 | 10 | 6 | 85 | Chemistry; botany; field experiments; horticulture; diseases of plants; entomology; feeding experiments. |
| New York (State)..... | Geneva..... | W. H. Jordan..... | Mar. —, 1882 | 15 | ----- | 120 | Chemistry; meteorology; analysis and control of fertilizers; field experiments; horticulture; diseases of plants; feeding experiments; poultry experiments; dairying. |
| New York (Cornell)..... | Ithaca..... | I. P. Roberts..... | 1879 | 13 | 6 | 40 | Soils; fertilizer investigations; field experiments; poultry experiments; dairying. |
| North Carolina..... | Raleigh..... | H. B. Battle..... | Mar. 12, 1877 | 11 | 2 | 90 | Chemistry; analysis and control of fertilizers; field experiments; horticulture; seed testing; composition of feeding stuffs; digestion experiments; poultry experiments. |
| North Dakota..... | Fargo..... | J. H. Wurst..... | Mar. —, 1890 | 11 | 11 | 400 | Field experiments; horticulture; diseases of plants; feeding experiments. |
| Ohio..... | Wooster..... | C. E. Thorne..... | Apr. 25, 1882 | 14 | ----- | 607 | Soils; field experiments; horticulture; diseases of plants; entomology; breeding and feeding experiments. |
| Oklahoma..... | Stillwater..... | G. E. Morrow..... | Dec. 25, 1890 | 8 | 7 | 120 | Waters; soils; field experiments; horticulture; entomology; feeding experiments. |
| Oregon..... | Corvallis..... | H. B. Miller..... | July —, 1888 | 10 | 10 | 155 | Chemistry; soils; field crops; horticulture; diseases of plants; entomology; digestion and feeding experiments; dairying. |

* In 1882 the State organized a station here and maintained it until June 18, 1895, when it became part of the Hatch Station at same place.

TABLE NO. 1.—General statistics of the agricultural experiment stations in the United States—Continued.

| Station. | Location. | Director. | Date of original organization. | Date of organization under Hatch Act. | Number in staff. | Number of teachers on staff. | Land used by station. | Principal lines of work. |
|---------------------|----------------------|-----------------------|--------------------------------|---------------------------------------|------------------|------------------------------|-----------------------|--|
| Pennsylvania..... | State College..... | H. P. Armsby..... | ..... | June 30, 1887 | 16 | 9 | <i>Acres.</i> 110 | Chemistry; meteorology; fertilizer analysis; field experiments; feeding experiments; dairying. |
| Rhode Island..... | Kingston..... | C. O. Flagg..... | ..... | July 30, 1888 | 10 | 2 | 33½ | Chemistry; field and pot experiments; horticulture; diseases of plants; poultry experiments. |
| South Carolina..... | Clemson College..... | E. B. Craighead..... | ..... | Jan. —, 1888 | 12 | 7 | 51 | Soils; analysis and control of fertilizers; field experiments; horticulture; dairying. |
| South Dakota..... | Brookings..... | J. H. Shepard..... | ..... | Mar. 13, 1887 | 10 | 5 | 160 | Chemistry; soils; field experiments; diseases of plants; forestry. |
| Tennessee..... | Knoxville..... | C. F. Vanderford..... | June 8, 1882 | Aug. 4, 1887 | 10 | 3 | 105 | Chemistry; botany; field experiments; horticulture; entomology. |
| Texas..... | College Station..... | J. H. Connell..... | ..... | Jan. 25, 1888 | 11 | 8 | 20 | Chemistry; field experiments; horticulture; diseases of plants; entomology; feeding experiments; diseases of animals. |
| Utah..... | Logan..... | L. Foster..... | ..... | 1890 | 12 | 6 | 90 | Chemistry; field experiments; horticulture; forestry; feeding experiments; poultry. |
| Vermont..... | Burlington..... | J. L. Hills..... | Nov. 24, 1886 | Feb. 28, 1888 | 11 | 6 | 120 | Chemistry; analysis and control of fertilizers; field experiments; horticulture; diseases of plants; entomology; feeding experiments; diseases of animals; dairying. |
| Virginia..... | Blacksburg..... | J. M. McBryde..... | 1888 | 1891 | 10 | 6 | 350 | Chemistry; fertilizers; diseases of plants; diseases of animals; entomology; feeding experiments. |
| Washington..... | Pullman..... | E. A. Bryan..... | ..... | 1891 | 9 | 6 | 235 | Soils; field experiments; horticulture; forestry; feeding experiments. |
| West Virginia..... | Morgantown..... | J. A. Myers..... | ..... | June 11, 1888 | 10 | 6 | 90 | Chemistry; analysis and control of fertilizers; horticulture; entomology. |
| Wisconsin..... | Madison..... | W. A. Henry..... | 1883 | 1887 | 15 | 10 | 40 | Chemistry; soils; field experiments; horticulture; feeding experiments; diseases of animals; dairying; drainage and irrigation. |
| Wyoming..... | Laramie..... | F. P. Graves..... | 1887 | Mar. 1, 1891 | 12 | 6 | 301 | Geology; botany; meteorology; waters; soils; fertilizers; field experiments; entomology; food analysis; feeding experiments. |

TABLE NO. 2.—Revenue of the agricultural experiment stations in 1896.

| Station. | Hatch fund. | State. | Individuals and communities. | Fees. | Farm products. | Miscellaneous. | Addition to equipment in 1896. | | | | | | | Total. |
|---------------------------|-------------|-------------|------------------------------|------------|----------------|----------------|--------------------------------|----------|------------|------------------|-------------|----------------|------------|--------|
| | | | | | | | Buildings. | Library. | Apparatus. | Farm implements. | Live stock. | Miscellaneous. | | |
| Alabama (College)..... | \$15,000.00 | | | \$8,249.25 | | | \$937.28 | \$676.11 | \$639.65 | \$183.23 | \$170.00 | | \$2,606.27 | |
| Alabama (Canebrake)..... | | \$2,500.00 | | | \$625.00 | | 100.00 | | 100.00 | 125.00 | 35.00 | \$505.00 | 3,125.00 | |
| Arizona..... | 15,000.00 | | | | | \$43.50 | 729.42 | 3.80 | 205.34 | 358.99 | | | 1,297.55 | |
| Arkansas..... | 15,000.00 | | | | | | 100.00 | | 205.34 | 358.99 | | | 1,578.48 | |
| California..... | 15,000.00 | 15,098.89 | | | | | 711.68 | 360.95 | 138.30 | 324.05 | 43.50 | | 2,689.98 | |
| Colorado..... | 15,000.00 | | | | 2,952.71 | 65.23 | 3,036.57 | 122.49 | 203.93 | 251.99 | 1,029.50 | | 1,479.62 | |
| Connecticut (State)..... | 7,500.00 | 11,875.00 | | 6,669.93 | 57.80 | 26,515.65 | 85.29 | 19.04 | 123.48 | 222.31 | | | 1,744.87 | |
| Connecticut (Storrs)..... | 7,500.00 | 1,800.00 | | | 52.10 | 10,114.59 | 717.82 | 568.27 | 428.78 | 30.00 | 179.12 | | 1,364.17 | |
| Delaware..... | 15,000.00 | | | | 300.81 | 16,300.87 | 507.26 | 383.22 | 640.31 | 22.85 | 229.93 | 74.63 | 1,498.66 | |
| Florida..... | 15,000.00 | 900.16 | | | 15.49 | 15,015.49 | 1,153.15 | 108.27 | 144.76 | 27.37 | 95.00 | | 1,388.80 | |
| Georgia..... | 15,000.00 | 607.82 | | | 2,040.32 | \$770.51 | 1,418.65 | 7.69 | 188.31 | 141.24 | | | 1,498.66 | |
| Idaho..... | 15,000.00 | | | 140.00 | 500.00 | 15,500.00 | 750.00 | 4.09 | 86.35 | 1,174.26 | 255.40 | | 2,270.10 | |
| Illinois..... | 15,000.00 | | | | 2,904.53 | 18,249.02 | 619.11 | 247.60 | 9.35 | 322.50 | 425.40 | | 1,623.96 | |
| Indiana..... | 15,000.00 | | | | 2,239.25 | 17,239.25 | 129.15 | 171.92 | 65.64 | 198.72 | 87.65 | | 1,653.08 | |
| Iowa..... | 15,000.00 | 1,500.00 | | | 3,358.32 | 125.20 | 19,983.52 | 396.14 | 21.23 | 33.35 | 227.40 | 1,805.78 | 2,483.08 | |
| Kansas..... | 15,000.00 | | | | 539.75 | 15,539.75 | 477.05 | 112.24 | 67.54 | 163.89 | | | 820.72 | |
| Kentucky..... | 15,000.00 | | | \$7,669.71 | \$1,600.21 | \$374.90 | 146.09 | 368.02 | 16.75 | 440.60 | 435.00 | 261.39 | 4,667.85 | |
| Louisiana..... | 15,000.00 | 18,000.00 | \$2,624.75 | 4,395.94 | 496.86 | 24,704.82 | 523.17 | 197.71 | 97.47 | 1,302.95 | 260.00 | | 2,377.30 | |
| Maine..... | 15,000.00 | | | 1,846.59 | | 18,023.45 | 154.61 | 136.09 | 700.00 | | 650.00 | | 1,660.70 | |
| Maryland..... | 15,000.00 | | | | 693.21 | 16,350.20 | 2,017.57 | 105.42 | 38.06 | 341.73 | 487.75 | | 3,485.24 | |
| Massachusetts..... | 15,000.00 | \$11,704.37 | | 3,627.17 | 1,204.40 | 32,269.64 | 1,790.27 | 1,019.95 | 341.73 | 365.00 | 909.10 | 332.45 | 4,010.69 | |
| Michigan..... | 15,000.00 | | | | 1,380.00 | 20,673.61 | 730.00 | 131.95 | 294.93 | 58.05 | 1,855.81 | 99.65 | 2,273.68 | |
| Minnesota..... | 15,000.00 | 11,262.75 | | | | 26,262.57 | 823.64 | 48.87 | 240.73 | 523.40 | 1,005.84 | | 3,324.15 | |
| Mississippi..... | 15,000.00 | | | 40.50 | 1,738.67 | 17,029.57 | 1,500.00 | 73.98 | 982.79 | 148.58 | 511.05 | 332.07 | 2,921.02 | |
| Missouri..... | 15,000.00 | | | 356.96 | 913.83 | 17,594.05 | 951.75 | 276.54 | 982.79 | 148.58 | 511.05 | | 3,140.78 | |
| Montana..... | 15,000.00 | | | | 1,235.32 | 16,245.32 | 1,983.32 | 165.67 | 345.47 | 426.13 | 498.60 | | 2,437.09 | |
| Nebraska..... | 15,000.00 | | | | | 516.04 | 812.83 | 173.29 | 817.40 | 457.78 | 178.68 | | 2,437.09 | |
| Nevada..... | 15,000.00 | | | 558.00 | 76.65 | 15,135.11 | 703.50 | 31.74 | | 65.84 | | 447.92 | 1,349.00 | |
| New Hampshire..... | 15,000.00 | | | | 623.67 | 16,181.67 | 392.60 | 4.66 | 238.07 | 846.51 | 93.72 | 175.33 | 1,770.80 | |
| New Jersey (State)..... | 15,000.00 | \$15,998.72 | | | | 15,998.72 | 645.60 | 625.37 | 491.23 | 55.85 | | | 1,818.05 | |
| New Jersey (college)..... | 15,000.00 | | | | 110.75 | 15,000.00 | 627.45 | 25.60 | 210.32 | 109.80 | 55.00 | | 1,028.17 | |
| New Mexico..... | 15,000.00 | | | | 1,460.37 | 15,110.75 | 11,909.53 | 700.35 | 1,101.07 | 541.40 | 638.25 | | 14,016.60 | |
| New York (State)..... | 1,500.00 | | | | \$850.29 | \$8,956.07 | 757.57 | 80.94 | 472.46 | 20.00 | | | 1,538.00 | |
| New York (Cornell)..... | 13,500.00 | 16,000.00 | | | 9,000.00 | 30,350.29 | 866.50 | 281.88 | 144.47 | 282.36 | 361.20 | | 1,736.41 | |
| North Carolina..... | 15,000.00 | | | | 1,015.00 | 25,015.00 | 1,600.98 | 9.15 | 736.42 | 400.50 | | | 2,307.05 | |
| North Dakota..... | 15,000.00 | 83.34 | | | 2,386.46 | 17,693.80 | 1,160.98 | 45.45 | 74.42 | 271.87 | 457.10 | | 23,173.77 | |
| Ohio..... | 15,000.00 | 52,184.98 | | | 4,453.74 | 71,638.72 | 24,326.91 | 1,009.50 | 1,280.64 | 605.97 | 1,316.27 | | 4,668.98 | |
| Oklahoma..... | 15,000.00 | | | | 544.38 | 15,544.38 | 748.37 | | 167.23 | 342.75 | 139.00 | | 1,537.30 | |
| Oregon..... | 15,000.00 | | | | 10,885.13 | 13,000.00 | 587.63 | 15.50 | 183.43 | 279.73 | 90.96 | | 1,700.93 | |
| Pennsylvania..... | 15,000.00 | | | 7,755.03 | | 33,690.95 | 558.16 | | 157.68 | 505.88 | | | 2,015.03 | |
| Rhode Island..... | 15,000.00 | | | 2,676.84 | | 20,667.08 | 276.58 | | 299.22 | 931.02 | | | | |
| South Carolina..... | 15,000.00 | | | | 1,296.04 | 15,000.00 | 556.01 | 164.71 | | | | | | |

† For year ending September 30, 1896.

† \$1,000 special appropriation for San José scale.

* Including balance on hand.

TABLE NO. 2.—*Revenue of the agricultural experiment stations in 1896—Continued.*

| Station. | Hatch fund. | State. | Individuals and communities. | Fees. | Farm products. | Miscellaneous. | Total. | Addition to equipment in 1896. | | | | | | |
|--------------------|-------------|------------|------------------------------|-----------|----------------|----------------|--------------|--------------------------------|-----------|------------|--------------------|-------------|----------------|------------|
| | | | | | | | | Buildings. | Library. | Apparatus. | Farm improvements. | Live stock. | Miscellaneous. | Total. |
| South Dakota..... | \$15,000.00 | \$1,120.00 | ..... | ..... | ..... | \$684.13 | \$16,804.13 | \$1,303.86 | \$29.66 | \$402.34 | \$222.58 | \$10.00 | ..... | \$1,968.44 |
| Tennessee..... | 15,000.00 | ..... | ..... | \$415.00 | \$1,440.12 | ..... | 16,855.12 | 1,402.32 | 172.83 | 308.94 | 159.95 | 265.00 | ..... | 2,309.04 |
| Texas..... | 15,000.00 | 2,500.00 | ..... | ..... | ..... | ..... | 17,500.00 | 204.28 | 106.47 | 29.50 | 55.67 | 10.00 | ..... | 2,405.92 |
| Utah..... | 15,000.00 | ..... | ..... | ..... | 2,314.05 | ..... | 17,314.05 | 150.88 | 126.74 | 276.97 | 362.48 | 557.73 | ..... | 1,474.80 |
| Vermont..... | 15,000.00 | 1,531.37 | ..... | ..... | 3,389.07 | ..... | 19,920.44 | 1,377.99 | 176.67 | 126.96 | 387.05 | 696.50 | ..... | 2,765.17 |
| Virginia..... | 15,000.00 | ..... | ..... | ..... | 3,455.76 | 114.63 | 18,570.39 | 298.83 | ..... | ..... | 184.73 | 368.35 | ..... | 851.91 |
| Washington..... | 15,000.00 | 8,000.00 | \$2,500.00 | ..... | ..... | 1,733.00 | 27,233.00 | 870.60 | 146.43 | 92.23 | 454.24 | 349.25 | ..... | 1,912.75 |
| West Virginia..... | 15,000.00 | ..... | ..... | 5,709.03 | 259.17 | \$1,386.99 | 22,355.19 | 2,834.23 | 316.52 | 1,096.86 | 1,168.68 | 819.66 | \$78.12 | 6,344.07 |
| Wisconsin..... | 15,000.00 | 5,000.00 | ..... | 425.00 | 9,575.00 | ..... | 30,000.00 | 1,251.78 | 448.00 | 976.18 | 1,331.01 | 131.00 | ..... | 4,137.97 |
| Wyoming..... | 15,000.00 | ..... | ..... | ..... | 266.95 | ..... | 15,266.95 | 454.38 | ..... | 126.00 | 471.88 | 418.00 | ..... | 1,470.26 |
| Totals..... | 720,000.00 | 267,663.10 | 5,124.75 | 51,884.95 | 69,806.50 | 19,311.93 | 1,133,791.23 | 76,175.24 | 10,902.68 | 14,753.95 | 19,103.76 | 19,503.55 | 2,416.50 | 148,776.13 |

* Including balance on hand.

TABLE No. 3.—Expenditures of the agricultural experiment stations from United States appropriation for year ending June 30, 1896.*

| Station. | Amount. | Itemized. | | | | | | | | | | | | Build- ing and re- pairs. | Bal- ance. | | | | | |
|---------------------------|----------|------------|------------|--------------------|--|-------------------------|----------------------------------|--|---|-------------------|-------------------------|---------------|--|---------------------------------------|---------------|---|------------------------------------|----------------|---------------------------------------|--|
| | | Salaries. | Labor. | Publi- cations. | Post- age and sta- tion- ery. | Freight and express. | Heat, light, and water. | Chem- ical and sup- plies. | Seeds, plants, and sun- dry sup- plies. | Ferti- lizers. | Feed- ing stuffs. | Li- brary. | Tools, imple- ments, and ma- chinery. | | | Furni- ture and fix- tures. | Scien- tific appa- ratus. | Live stock. | Trav- el- ing ex- penses. | Con- tin- gent ex- penses. |
| Alabama..... | \$15,000 | \$8,950.77 | \$1,038.61 | \$417.61 | \$126.57 | \$256.28 | \$187.40 | \$485.88 | \$509.26 | \$306.99 | \$59.01 | \$676.11 | \$114.11 | \$95.14 | \$639.65 | \$170.00 | \$107.04 | \$136.35 | \$663.19 | \$12.91 |
| Arizona..... | 15,000 | 6,273.17 | 3,676.17 | 534.80 | 326.78 | 266.70 | 300.00 | 284.84 | 156.23 | 466.38 | 274.69 | 3.80 | 358.99 | 63.85 | 205.34 | 860.75 | 205.18 | 729.42 | ..... | ..... |
| Arkansas..... | 15,000 | 8,582.35 | 1,364.31 | 1,093.10 | 146.55 | 247.71 | 64.70 | 270.95 | 529.00 | 655.55 | 78.15 | 360.95 | 324.05 | 303.25 | 138.30 | 43.50 | 594.40 | 81.50 | 711.68 | ..... |
| California..... | 15,000 | 6,005.04 | 4,378.75 | 1,177.74 | 371.20 | 389.14 | 145.89 | 242.71 | 658.57 | 288.64 | 262.20 | 22.49 | 341.44 | 46.80 | 203.93 | 785.18 | 58.75 | 681.53 | ..... | ..... |
| Colorado..... | 15,000 | 9,224.36 | 3,304.48 | 522.40 | 113.08 | 70.68 | 6.85 | 54.30 | 575.90 | 96.00 | 326.38 | 19.04 | 222.31 | 36.29 | 123.48 | 1,029.50 | 179.66 | 10.00 | 85.29 | ..... |
| Connecticut..... | 7,500 | 7,500.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Delaware..... | 7,500 | 4,844.96 | 482.09 | 183.20 | 331.28 | 111.50 | 352.97 | 367.42 | 53.38 | 105.48 | 122.66 | 22.85 | 27.37 | 87.83 | 179.12 | 164.46 | 10.00 | 80.80 | ..... | ..... |
| District of Columbia..... | 15,000 | 9,829.78 | 1,148.95 | 752.21 | 185.38 | 77.84 | 214.95 | 210.14 | 221.11 | 12.34 | 51.29 | 503.87 | 27.37 | 190.85 | 144.76 | 226.93 | 623.34 | 74.63 | 507.26 | ..... |
| Florida..... | 15,000 | 5,134.53 | 3,580.72 | 1,858.20 | 97.83 | 209.62 | 198.20 | 103.49 | 806.02 | 650.76 | 517.90 | 10.52 | 133.79 | 16.40 | ..... | 95.00 | 676.48 | 123.82 | 603.32 | ..... |
| Georgia..... | 15,000 | 7,450.00 | 2,209.04 | 2,091.03 | 154.91 | 163.85 | 99.64 | 15.63 | 693.29 | 527.15 | 410.18 | 7.69 | 188.31 | 90.49 | ..... | ..... | 150.66 | 748.13 | ..... | ..... |
| Idaho..... | 15,000 | 6,382.79 | 3,807.52 | 1,227.25 | 821.00 | 395.73 | 594.60 | 10.00 | 491.09 | 147.50 | 56.72 | 4.09 | 174.26 | 89.75 | 86.35 | 255.40 | 178.90 | 127.00 | 78.00 | ..... |
| Illinois..... | 15,000 | 7,131.66 | 3,917.90 | 1,255.42 | 118.55 | 115.84 | 211.82 | 622.19 | 560.73 | 127.15 | 262.96 | 247.60 | 182.50 | 23.85 | 9.35 | 15.00 | 211.38 | 44.90 | 48.25 | ..... |
| Indiana..... | 15,000 | 8,197.70 | 3,049.30 | 1,523.34 | 143.59 | 58.16 | 401.50 | 156.23 | 500.43 | 174.92 | 26.24 | 171.92 | 179.64 | 23.85 | 39.20 | 76.75 | 33.66 | 16.40 | 396.14 | ..... |
| Iowa..... | 15,000 | 7,240.26 | 1,387.99 | 1,962.44 | 413.67 | 535.67 | 488.48 | 506.48 | 134.43 | ..... | ..... | 21.23 | 227.40 | 305.20 | 33.35 | 44.00 | 121.20 | 15.75 | 30.23 | ..... |
| Kansas..... | 15,000 | 10,699.97 | 2,216.33 | 1,428.83 | 70.46 | 126.16 | 153.46 | 24.66 | 303.96 | ..... | 198.53 | 112.24 | 163.89 | 6.25 | 67.53 | ..... | 225.76 | 96.00 | 13.25 | ..... |
| Kentucky..... | 15,000 | 9,699.75 | 2,447.00 | 974.35 | 134.50 | 62.56 | 153.46 | 162.17 | 420.51 | ..... | 2.00 | 368.02 | 47.53 | 246.39 | 16.73 | 260.00 | 178.34 | 223.21 | 519.46 | ..... |
| Louisiana..... | 15,000 | 7,944.10 | 1,739.98 | 1,759.62 | 360.05 | 410.58 | 213.71 | 917.18 | 160.39 | 168.94 | 247.27 | 137.71 | 251.90 | 101.10 | 97.47 | 866.40 | 650.00 | 241.76 | 248.56 | 6.53 |
| Maine..... | 15,000 | 7,619.10 | 2,676.46 | 982.26 | 76.43 | 132.15 | 300.71 | 225.71 | 301.23 | 32.70 | 340.67 | 156.09 | 35.17 | 281.92 | 98.06 | 487.75 | 306.38 | 241.76 | 248.56 | ..... |
| Maryland..... | 15,000 | 5,218.50 | 3,511.94 | 2,816.86 | 284.66 | 182.00 | 110.15 | ..... | 572.98 | 96.88 | 397.51 | 686.32 | 226.62 | 3.15 | 98.06 | ..... | 92.31 | 155.11 | 153.57 | ..... |
| Massachusetts..... | 15,000 | 9,301.57 | 1,593.00 | 823.30 | 156.19 | 133.94 | 110.15 | 244.43 | 549.00 | 173.34 | 894.50 | 131.93 | 188.05 | 99.65 | 204.92 | 900.10 | 296.94 | 155.11 | 153.57 | ..... |
| Michigan..... | 15,000 | 4,301.54 | 1,544.92 | 994.10 | 127.61 | 176.34 | 84.12 | 231.87 | 442.77 | 53.00 | 249.35 | 78.08 | 240.70 | 14.35 | 4.30 | 474.72 | 251.82 | 298.25 | 228.53 | ..... |
| Minnesota..... | 15,000 | 6,454.10 | 3,257.64 | 739.85 | 386.89 | 131.18 | 135.44 | 385.00 | 368.72 | 10.35 | 196.25 | 276.54 | 146.58 | 332.07 | 837.89 | 511.05 | 217.35 | 73.00 | 750.00 | ..... |
| Mississippi..... | 15,000 | 7,704.13 | 2,820.12 | 1,498.30 | 185.35 | 147.83 | 138.11 | 380.76 | 532.18 | 30.00 | 506.11 | 165.37 | 436.13 | 60.50 | 363.47 | 498.00 | 106.80 | 10.00 | 7.50 | ..... |
| Montana..... | 15,000 | 7,924.06 | 1,574.87 | 1,073.30 | 968.85 | 88.80 | 357.68 | 190.77 | 449.29 | 34.71 | 304.97 | 173.29 | 409.28 | 7.70 | 817.40 | 176.68 | 183.03 | 83.32 | 750.00 | ..... |
| Nebraska..... | 15,000 | 9,697.36 | 2,174.85 | 367.35 | 72.40 | 67.53 | 402.39 | 208.39 | 330.20 | ..... | 21.35 | 51.74 | 36.98 | 136.30 | ..... | 361.30 | 84.20 | 100.12 | ..... | ..... |
| Nevada..... | 15,000 | 8,010.00 | 1,395.36 | 608.34 | 37.78 | 221.10 | 495.76 | 163.02 | 324.27 | 243.44 | 040.41 | 4.06 | 846.51 | 175.33 | 298.07 | 93.72 | 496.26 | 191.47 | 392.00 | ..... |
| New Hampshire..... | 15,000 | 8,672.06 | 1,776.08 | 397.53 | 387.62 | 88.80 | 196.04 | 123.72 | 177.93 | 133.63 | 69.66 | 635.37 | 53.85 | 74.09 | 491.25 | 463.79 | 59.00 | 945.00 | ..... | ..... |
| New Jersey..... | 15,000 | 7,369.20 | 2,967.96 | 1,116.98 | 347.26 | 141.27 | 91.27 | 53.73 | 639.13 | 100.27 | 92.50 | 25.60 | 319.66 | 48.86 | 54.10 | 58.75 | 107.73 | 656.35 | 8.24 | ..... |
| New Mexico..... | 1,500 | 1,000.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| New York..... | 15,000 | 5,433.98 | 1,098.20 | 793.74 | 257.46 | 32.20 | 5.36 | 312.65 | 600.73 | 148.74 | 157.13 | 80.94 | 96.46 | 394.13 | 276.18 | 20.00 | 146.45 | 10.00 | 663.56 | ..... |
| New York-Cornell..... | 15,000 | 8,305.17 | 1,098.50 | 3,593.28 | 634.07 | 305.36 | 332.01 | 315.52 | 395.85 | 42.65 | 629.74 | 281.88 | 282.36 | 124.06 | 132.47 | 107.00 | 429.21 | 259.43 | 683.50 | ..... |
| North Carolina..... | 15,000 | 5,330.83 | 6,676.86 | 423.40 | 261.38 | 287.22 | 487.98 | 45.15 | 817.25 | ..... | 495.88 | 9.15 | 736.42 | 212.74 | ..... | 373.00 | 18.50 | 104.24 | 750.00 | ..... |
| North Dakota..... | 15,000 | 4,300.83 | 6,684.19 | 40.38 | 154.00 | ..... | 122.62 | 51.45 | 789.14 | 94.55 | 201.63 | 43.45 | 234.64 | 1.05 | 74.42 | 18.00 | 31.43 | 21.65 | 1.00 | ..... |
| Ohio..... | 15,000 | 12,437.00 | ..... | ..... | ..... | ..... | ..... | ..... | 719.24 | 3.99 | 270.71 | 1,009.50 | 605.97 | 478.91 | 1,280.61 | 1,316.27 | 104.58 | 10.00 | 74.37 | 30.70 |
| Oklahoma..... | 15,000 | 4,384.96 | 2,650.36 | 600.50 | 190.18 | 230.02 | 753.53 | 291.58 | 595.44 | 12.25 | 319.49 | 10.66 | 342.75 | ..... | 107.23 | 159.00 | 493.50 | 15.05 | 78.42 | ..... |
| Oregon..... | 15,000 | 9,686.05 | 2,171.04 | 269.90 | 68.51 | 144.81 | 193.80 | 296.23 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

* The expenditures under different heads are affected by the total revenues of the station as shown in Table 2.

TABLE NO. 3.—Expenditures of the agricultural experiment stations from United States appropriation for year ending June 30, 1896—Continued.

| Station. | Amount. | Salaries. | Labor. | Publications. | Postage and stationery. | Freight and express. | Heat, light, and water. | Chemical and supplies. | Seeds, plants, and sundry supplies. | Fertilizers. | Feeding stuffs. | Library. | Tools, implements, and machinery. | Furniture and fixtures. | Scientific apparatus. | Live stock. | Traveling expenses. | Contingent expenses. | Building and repairs. | Balance. |
|---------------------|----------|------------|----------|---------------|-------------------------|----------------------|-------------------------|------------------------|-------------------------------------|--------------|-----------------|----------|-----------------------------------|-------------------------|-----------------------|-------------|---------------------|----------------------|-----------------------|----------|
| | | | | | | | | | | | | | | | | | | | | |
| Pennsylvania..... | \$15,000 | \$1,634.97 | \$348.95 | \$815.32 | \$422.75 | \$178.78 | \$99.18 | \$187.99 | \$30.18 | \$33.54 | \$419.34 | \$15.50 | \$58.55 | \$1.25 | \$53.09 | \$90.96 | \$255.29 | \$38.00 | \$26.41 | ..... |
| Rhode Island..... | 15,000 | 8,469.27 | 1,713.68 | 1,969.34 | 104.42 | \$118.78 | 99.18 | 38.88 | 548.56 | 353.26 | 26.34 | 285.70 | 242.91 | 85.52 | 7.25 | 363.00 | 334.56 | 23.79 | 213.56 | ..... |
| South Carolina..... | 15,000 | 10,057.85 | 1,136.97 | 338.47 | 122.71 | 260.42 | 121.77 | 131.55 | 380.78 | 44.85 | 356.00 | 164.71 | 931.02 | 23.00 | 299.22 | 54.07 | ..... | 10.00 | 596.01 | ..... |
| South Dakota..... | 15,000 | 9,637.40 | 2,157.45 | 866.13 | 176.48 | 159.09 | ..... | 141.27 | 392.81 | ..... | 79.78 | 29.66 | 222.58 | 37.20 | 402.34 | 10.00 | 13.95 | 37.40 | 638.86 | ..... |
| Tennessee..... | 15,000 | 8,323.33 | 2,521.43 | 1,639.56 | 136.95 | 76.27 | 459.43 | 142.45 | 120.95 | 52.00 | 29.50 | 172.83 | 23.95 | 104.66 | 256.25 | ..... | 154.97 | 204.75 | 748.07 | ..... |
| Texas..... | 15,000 | 11,493.28 | 823.92 | 919.40 | 130.66 | 186.54 | ..... | 385.59 | 163.38 | ..... | 34.42 | 106.47 | 55.67 | ..... | 29.50 | 10.00 | 252.14 | 204.28 | 29.50 | ..... |
| Utah..... | 15,000 | 5,085.44 | 3,488.45 | 840.34 | 159.50 | 110.90 | 454.04 | 541.52 | 611.06 | ..... | 1384.73 | 126.74 | 362.48 | 100.40 | 276.97 | 557.73 | 125.10 | 23.72 | 150.88 | ..... |
| Vermont..... | 15,000 | 4,130.02 | 5,547.20 | 1,450.49 | 469.29 | 229.08 | 627.30 | 267.93 | 71.18 | 69.50 | 122.26 | 178.67 | 173.03 | 24.67 | 126.96 | 696.50 | 180.59 | 37.83 | 599.51 | ..... |
| Virginia..... | 15,000 | 8,655.73 | 2,690.01 | 295.73 | 53.38 | 166.32 | 199.21 | 178.36 | 602.50 | ..... | 307.68 | ..... | 184.73 | 14.97 | ..... | 160.00 | 168.56 | ..... | 298.83 | ..... |
| Washington..... | 15,000 | 7,297.65 | 3,742.48 | 520.84 | 91.81 | 360.41 | ..... | 137.92 | 637.64 | ..... | 201.43 | 146.43 | 450.24 | ..... | 89.78 | 349.25 | 166.75 | 10.40 | 746.97 | ..... |
| West Virginia..... | 15,000 | 8,534.87 | 2,287.21 | 120.94 | 770.71 | 361.74 | 287.74 | 708.24 | 580.29 | ..... | 172.68 | 153.81 | 331.01 | ..... | 186.43 | 819.66 | 173.88 | 1.71 | ..... | ..... |
| Wisconsin..... | 15,000 | 6,875.00 | 3,996.61 | 44.94 | 197.11 | 128.34 | 491.63 | 70.15 | ..... | ..... | ..... | ..... | ..... | ..... | 126.00 | 418.00 | 86.41 | 23.45 | 440.30 | ..... |
| Wyoming..... | 15,000 | 4,604.67 | 5,819.12 | 1,010.18 | 167.12 | 197.55 | 68.01 | 142.83 | 353.21 | ..... | 229.74 | ..... | 471.88 | 164.40 | ..... | 418.00 | 765.81 | 8.10 | 454.38 | ..... |









